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TO THE James Horsburg

# HONORABLE THE COURT OF DIRECTORS

OF THE

# *United East India Company.*

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HONORABLE SIRS,

PERMIT me again to dedicate to your Honorable Court, a new and improved edition of the following work, which is designed to contribute to the safety and facility of the navigation to, and from India and China, and throughout the seas eastward of the Cape of Good Hope, being highly essential to the interests and welfare of the Company, as well as to the prosperity of the British Empire. As it was originally undertaken and completed under the auspices of the Honorable Court, after several years laborious and minute investigation of their maritime records, added to the experience and knowledge acquired during a very long period of navigating in those seas, the author begs leave to submit to the Honorable Directors, this corrected and enlarged edition, as a small but sincere testimony of the esteem and respect which he entertains for their patronage and favor, and to subscribe himself

Their very faithful

And most obliged Servant,

XAa 5

JAMES HORSBURGH.

*Chart Office, East India House,*
*London, 20th of Aug.* 1817.

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# PREFACE.

IN submitting a second edition of this Sailing Directory to the Public, and to those Navigators who frequent the oriental seas and adjacent parts, the author is happy to return his sincere thanks for their candid reception of the first edition of his work, and he trusts that the present will be found still more worthy of public confidence.

To correcting, re-writing, and enlarging this edition of volume first, with much useful information obtained, as well as the discoveries made, since the original publication of the India Directory, he has devoted a great portion of his time during the last seven years.—The result of his researches and attention will easily be perceived, by a reference to the following places, the descriptions of which have either been re-written with many important additions, or they comprehend original materials entirely new:

Geographical situations of the principal harbours and headlands on the coasts of Spain and Portugal, with directions.—Canary Islands.—Coast of Guinea, and West Coast of Africa.—Chief Harbours on the Coast of Brazil, and Rio de la Plata.—Bouvet's Island.—Gough's Island.—Tristan de Acunha.—Bird Islands, and Doddington Rock, and Knysna in South Africa.—South Coast of Terra Australis, and Bass' Strait.—Africa East and N. E. Coasts, to the Red Sea, and Arabian Coast.—Island Mazeira, with soundings, not before known.—Gulf of Persia nearly all re-written, and greatly enlarged and corrected from late surveys.—Aldabra Islands,· true

situation by late observations.—Several late discovered shoals, and geographical limits of Saya de Malha Bank.—Maldiva Islands, their principal Channels elucidated, and lost knowledge restored, from original journals, and other documents.—Directions to sail into Marmagoa Road.—Gulf of Manar.—Great and Little Basses, Ceylon.—Hooringottah River, Bengal.—Directions for sailing between Malacca Strait, and Bengal, and Madras; with many other useful observations and directions, too numerous to be mentioned in a preface.

From the elaborate surveys of the late Captain Flinders, and that excellent work on "Maritime Geography" by Captain James Hingston Tuckey, the author has derived some valuable information. To the latter able and scientific officer, who is at present engaged in the arduous task of exploring the Zahir, or Congo River, he is also indebted for some important observations in MS. which have contributed materially to improve this new edition of the "India Sailing Directory." With these additions, and the diligence which he has bestowed in correcting errors of the press, he hopes that its utility to his brother seamen, may prove as great as his wishes for their safety, and the nautical prosperity of Great Britain.

CHART OFFICE, EAST INDIA HOUSE,
*August* 10, 1816.

# CONTENTS.


PAGE

DIRECTIONS for sailing from England towards India.—First towards Madeira; places of shelter near this Route ..... 1

Directions for sailing from Madeira to the Southward:—Salvages, Canary, and Cape Verd Islands ..... 9

A Table denoting the Equatorial Limits of the Trade Winds between Africa and America, as experienced in every month of the year ..... 16

Directions for sailing from the Cape Verd Islands across the Equator:—Islands in the South Atlantic, or Ethiopic Ocean ..... 27

Abstracts and Remarks, on Passages to, and from St. Helena.—1st. Eastern Passage ..... 37

2d. Western Passage ..... 42

3d. Comparative View of Passages to, and from St. Helena ..... 44

Winds and Currents in the Gulf of Guinea:—Coasts, and adjacent Islands, and from thence to the Southward ..... 46

Winds and Currents, near the Equator, and the Brazil Coast.—and of ships which have been carried near the latter ..... 50

Brazil Coast.—Headlands, and principal Harbours, with sailing Directions ..... 53

Instructions and Observations for Navigating the Rio de la Plata, or River Plate, by Captain Heywood of the Royal Navy ..... 59

Directions to sail from the Coast of Brazil, toward the Cape of Good Hope;—Islands near this Route ..... 67

PAGE

Cape of Good Hope.—Description of the Bays, and the Coasts in its vicinity, with Sailing Directions ..... 71

Cape and Bank of Aguilhas.—Description of the Land, the Bank, and Currents ..... 80

Winds and Weather near the Bank of Aguilhas.—Doubtful Dangers, to the South, and Eastward 84

Islands in the Southern Ocean.—Directions to Sail from the Cape of Good Hope, toward Bass' Strait, and Cape Van Dieman.—Winds and Currents ..... 89

Dangers near the West Coast of New Holland, near Sandalwood Island and Timor ..... 98

Sailing Directions from St. Paul, toward the North-west Cape of New Holland, and the Straits East of Java ..... 105

Islands to the South and S. Eastward of Java, adjacent Straits and South Coast.—Directions to sail from St. Paul, to the Strait of Sunda .... 108

Directions for the Outer Passage, to places on either side the Bay of Bengal; and the prevailing Winds in the Indian Seas ..... 115

Directions to sail from the Cape of Good Hope, to Bombay, the Malabar Coast, or Ceylon, also from Mauritius to Ceylon, by the Middle Passage ..... 118

Directions for the Passage to the Eastward of Madagascar ..... 120

Directions for sailing to the Islands Roderigue, Mauritius, and Bourbon:—Description of them, and the Passage from thence towards India .. 122

CONTENTS.


PAGE

Eastern Coast of Madagascar.—With Sailing Directions ..... 128

Description of the Archipelago of Islands, and Dangers, North, and North-east of Madagascar.. 133

Chagos Archipelago, with Sailing Directions..... 144

Instructions for the Channel of Mozambique, and for St. Augustine's Bay.—South and West Coast of Madagascar; Islands, Shoals, Winds and Currents ..... 150

Comoro Islands, and Dangers near them; with Directions for sailing to the anchorage of Comoro, Mohilla, Mayotta, and Johanna ..... 167

Passage from the Comoro Islands, towards India.—Adjacent Islands and Shoals ..... 173

South Coast of Africa, from Cape Aguilhas to Algoa Bay; Bays, Headlands, and Sailing Directions ..... 176

Coast of Africa, from Algoa Bay, to Cape Corrientes ..... 181

Description of the Coast of Africa, from Cape Corrientes to Mozambique ..... 185

Coast of Africa, from Mozambique to the Equator 191

Coast of Africa, from the Equator, to Cape Guardafui;—and the Island Socotra..... 199

Coast of Africa, from Cape Guardafui, to the Straits of Bab-el-mandeb, with Sailing Directions.. 203

Coast of Arabia, from Cape Aden to Mocha, and the Straits of Bab-el-mandeb..... 207

Navigation of the Red Sea.—Coasts of Abyssinia and Arabia, with Sailing Directions ..... 212

Coast of Arabia ..... 215

Directions for sailing from Mocha to Juddah;—Description of Dangers near the Passage.... 217

Directions for sailing from Juddah to Koseir.—Islands and Dangers in the Passage... ... 222

Instructions to sail from Koseir, up the Sea of Suez. Islands, Dangers, and Harbours in the Passage 224

Of Winds and Currents;—Directions for sailing to, and from the Red Sea..... 2 1

Coast of Arabia from Aden to Ras-el-had, Muscat, and Cape Mussendom.—Winds, Currents, Bays, Headlands, and Sailing Directions.. . 235

PAGE

Directions for sailing from India to Muscat, and to the entrance of the Persian Gulf..... 244

Coasts of Scindy and Persia, with Sailing Directions.—1st. Coast of Scindy, from the Gulf of Cutch to Cape Monze..... ..... 246

2d. Coast of Persia from Cape Monze to Cape Jask 248

Gulf of Persia:—Winds and Currents;—Directions for sailing to Basra:—Coasts, Islands, Harbours, &c. ..... 253

Arabian Side of the Gulf..... 269

Directions to sail from the Gulf of Persia, to the Malabar Coast, and other parts of India.... 272

Coast of Guzarat from Goapnat Point, to Diu Head, and the Gulf of Cutch..... 274

Coast of India, from Bombay to Surat River, with Sailing Directions ..... 276

Gulf of Cambay; Banks near the Entrance, and Directions from Surat Bar to the Northward 281

Directions from Surat Bar to Gogo, and from the Gulf of Cambay, to the Southward, in the S. W. Monsoon..... 285

Monsoons, Land and Sea Breezes, and Currents, on the Western Side of Hindoostan;—Directions for sailing along the Coast..... 285

Bombay Harbour, and the circumjacent Land; with Sailing Directions.—1st. Description of the Hills, Lighthouse, Islands, &c..... 290

2d. Description of Dangers, with the Marks to avoid them ..... 295

3d. Of Tides and Soundings ..... 296

4th. Brief Remarks for Entering the Harbour.... 297

5th. To Work into the Harbour during the night, when the weather is clear ..... 299

6th. To approach the Harbour in the S. W. Monsoon ..... 299

Directions to Work out of Bombay Harbour, in the S. W. Monsoon, and to sail Southward to the South Coast of Ceylon ..... 301

Description of the Western Coast of India, from Bombay to Cape Comorin.—1st. The Coast of Concan, with Sailing Directions..... 301

2 The Coast of Canara, with Sailing Directions 310

CONTENTS.


| | Page |
|---|---|
| 3d. The Coast of Malabar, with Sailing Directions | 313 |
| Laccadiva, or Laccadive Islands.—Channels and Dangers, with Sailing Directions | 322 |
| Maldiva Islands, their extent, and separating Channels, with Sailing Directions | 328 |
| To sail between Cape Comorin and Point de Galle: —Coast of Madura, and Gulf of Manar | 347 |
| West Coast of Ceylon, from Manar to Point de Galle, with Sailing Directions | 352 |
| South Coast of Ceylon, from Point de Galle to the Elephant Hill;—Great and Little Basses with Sailing Directions | 359 |
| Eastern Coast of Ceylon, from the Elephant Hill to Trincomale; with Sailing Directions | 365 |
| Trincomale Bay, Back Bay, and the Contiguous Coast, with Sailing Directions | 368 |
| North-East, and North Coast of Ceylon, from Flagstaff Point to Point Pedro; with Sailing Directions | 373 |
| Palks Bay; Winds and Currents on the Eastern Coast of Ceylon.—Directions to approach or depart from it in the N. E. Monsoon | 376 |
| Coast of Coromandel.—Description of that Coast, from Point Calymere to Madras, with Sailing Directions | 380 |
| Coast of Coromandel, continued, from Madras to the Northward; with Sailing Directions | 388 |
| Coast of Golconda.—Ports, Bays, and Headlands, with Sailing Directions | 390 |
| Coast of Orixa, or Orissa, with Sailing Directions | 394 |
| Entrance of the River Hoogly, or Calcutta River.—Description of the Channels, Sea Reefs, and Sands | 401 |
| Directions to approach the River Hoogly; Winds, and Currents, or Tides | 406 |
| Storms near and in the River Hoogly. Laccam's Channel, Codjee Deep:—Tides, and the Bore | 413 |
| Coast of Bengal, from Codjee Deep, to Chittagong. —And the Interjacent Rivers | 417 |
| Monsoons and Currents in the Bay of Bengal | 422 |
| Directions to sail from the Southern parts of the Bay, toward Bengal; in both Monsoons | 425 |
| Directions for sailing from Bengal to Madras, and the Southern parts of the Bay, during both Monsoons | 427 |
| Directions for Sailing from Bengal, Madras, or other parts of the Bay; by the Southern Passage to Bombay, or other places to the Westward, during the S. W. Monsoon | 432 |
| Directions for sailing between Bengal or Madras, and the Strait of Malacca | 434 |

## Errata.

By unremitted attention to the correction of the press, it appears, that no errors of consequence have crept into this Volume, for after a careful perusal of every sheet as it issued from the press, it is satisfactory to observe, that the following abberations only have been found.

| *Page.* | *Line.* | | |
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| 160 - - - | 22 - - | 43° 30' S. - | 43° 30' E. |
| 241 bottom line | - - | Kuriat - | *Kuriat.* |
| 250 - - - | 13 - - | Gáudel - | *Guadel.* |
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# INTRODUCTION.

## *COMPENDIUM of WINDS, WAVES, TIDES, CURRENTS, MAGNETISM, VARIATION of the COMPASS, &c.*

PARTICULAR, OR LOCAL WINDS, WEATHER, AND CURRENTS, are described as they prevail, in the different parts of this work, to which the reader is referred; yet, it may, nevertheless, be expedient, to give here a summary view of the winds in general, with some remarks on causes which usually produce the prevailing winds on the surface of our globe.

WIND is only a current of air, or a part of our atmosphere in a state of more or less rapid motion, its principal cause, is a partial or local rarefaction of the air by heat. When the air is heated it becomes specifically lighter, and in this state naturally ascending, the less rarefied or colder air rushing into its place to restore the equilibrium, forms a current of air, or what is properly called wind.. Heat also increases *evaporation*, by which the atmosphere is rendered more elastic, and capable of retaining a greater quantity of moisture in the gaseous state than it can when colder; this may be considered as *another* cause tending to produce diversity in winds and weather, as an addition of moisture expands the air, and renders it specifically lighter than it would be at the same temperature with humid vapour. Principal causes of Winds.

Electricity must be considered as a *third* cause acting on the atmosphere, and having great influence in the local changes of winds and weather; currents of air are always produced by the passage of electric matter, and when the atmosphere is expanded by the presence of the electric fluid and surcharged with aqueous vapour, it is incapable of supporting a great quantity of the latter, which consequently decends in wet fogs or rain, while the denser and more elastic air near the rainy district, rushes toward it, to restore the equilibrium.

Winds may be arranged under three distinct heads; *Constant* or *Perpetual*, *Periodical*, and *Variable*. Constant or Perpetual, are those which blow always in the same direction, and are called Trade Winds. Periodical Winds, or those which blow one half of the year in the same direction, and the other half in a contrary one, are generally called Monsoons. Variable Winds, are those which are not subject to any determinate periods or uniformity. Three kinds of winds.

Tradewinds.

TRADE WINDS, seem to be occasioned by the rotatory motion of the earth on its axis, combined with the influence of the sun in rarefying the atmosphere between the tropics. The cold dense air at the poles, would naturally move along the surface of the globe to take the place of the hot rarefied air at the equator; but the earth's rotatory motion, and the gradually increasing velocity of this motion at its surface from the poles to the equator, oblige these polar currents of air to diverge from their meridians on their route to the equator, and ultimately to acquire a direction from East to West.

From the rotation of the earth, the sun's apparent diurnal motion is from East to West, consequently the points of greatest rarefaction must move in the same direction with that luminary, the atmosphere being greatly heated in a continued succession under every part of the sun's passage over the earth. The places, therefore, of greatest rarefaction following the sun from East to West, the denser air must move toward them, and thus occasion a constant easterly wind in the ocean remote from land between the tropics.

Hence, by the dense air proceeding from the polar regions in a northerly and southerly direction toward the equator, and afterwards more westerly toward the points of greatest rarefaction, a N. E. wind is produced on the North side, and a S. E. wind on the South side of the equator. These trade winds, both in their *direction* and *limits*, incline toward the sun or place of greatest rarefaction; that is, when the sun is near the tropic of Cancer, or returning from it, having greatly heated the northern hemisphere, the S. E. trade wind inclines farther from the East point than in the opposite season, and blows with strength toward the place of greatest rarefaction; and its northern limit reaches nearly to, and in some places, beyond the equator. The N. E. trade wind at the same time, generally inclines nearer to the East point than in the other season, blowing with less strength, and becoming contracted in its limits, the southern limit then receding several degrees to the northward of the equator. And in the opposite season, when the southern hemisphere is greatly heated by the sun, the N.E trade wind blows stronger, inclines farther from the East point, and approaches nearer to the equator; the strength of the S. E. trade wind at the same time, being diminished considerably by the influence of the sun.

As there is a perpetual current of air proceeding from the polar regions to the equator, where it is rarefied, while the superior gravity of the cold makes the heated air ascend to the upper regions of the atmosphere, and thence it returns back to the poles, to preserve the equilibrium; this upper current of air must proceed from the parts in which the heat is greatest, so that by a kind of atmospherical circulation, admirably adapted to the preservation of animal life, the N. E. trade wind below will be attended by a S.W. above, and the S. E. trade wind below with a N.W. wind above. This opinion is corroborated by the clouds in the upper part of the atmosphere, which are frequently seen to move in a contrary direction to the trade winds; and by an instantaneous change of wind, often experienced when the limits of the trade winds are passed.

Places where they prevail.

THE TRADE WINDS extend generally to about 28° on each side of the equator, and there is in most places, a considerable space of variable light winds between them, in which westerly winds mostly prevail, forming a kind of monsoon near the equator, in several parts of the globe.

The N. E. and S. E. trade winds prevail in the open sea, in the Atlantic and Pacific Oceans, and from the great extent of the latter, they generally blow more steady in it than in the former; and the S. E. trade wind in the southern Atlantic Ocean, blows steadier than the N. E. trade wind to the northward of the equator, where the ocean becomes contracted between Cape Verd and the northern extremity of the Coast of Brazil; but toward the West India Islands, the N. E. trade wind generally blows steady between E. and E. N. E.

The S. E. trade wind prevails also in the Indian Ocean, from within a few degrees of the East side of Madagascar nearly to the coast of New Holland, between the parallels of

latitude 10° to 28° S; but in this ocean, from latitude 10 S. to the coasts of India, the winds are periodical.

These trade winds are only constant in the ocean at a considerable distance from land; for large islands and continents obstruct the regular currents of the atmosphere, and thereby, produce either periodical or variable winds. When land is heated by the influence of the sun, the atmosphere over it becomes rarefied, the air acquires motion, and a wind is produced blowing from the ocean toward the land. This may be exemplified by the winds on the African Coast within the limits of the N. E. trade, blowing often from North and N.W. about Cape Verd; and from S. W. and S. S. W. betwixt the Coast of Guinea and the Cape of Good Hope, within the limits of the S. E. trade; instead of N. E. and S. E., as is experienced when well out from the land, in the open ocean.

When the land of New Holland, is heated by the presence of the sun in the southern hemisphere, the wind blows generally from the westward upon the N. W. coast; from the S.W. upon the West coast; from S. W., South, and S E., upon the South coast; and from S. E. and eastward upon the East coast of that extensive track of land: winds, indeed, blow nearly always from the sea, toward the heated atmosphere over the land. But contiguous to shores, sea and land breezes are often experienced.

High land, obstructs much more than low land, the regular progress of winds, for a steady trade wind will pass over a considerable track of low level land, without being much changed in its direction or velocity, particularly if that land be barren and destitute of moisture. But if the wind comes in contact with high land or mountains, it is compressed in passing over their summits, as the atmosphere being heated by the sun's rays according to its density, is much warmer at the bottom than at the top of mountains; consequently, the air is cooled in its ascent, and being frequently condensed into humid clouds or fog, it is discharged in wet misty vapour, or in small rain, upon the tops of the mountains. This may be often seen on the Table Mountain at the Cape of Good Hope, or on high islands between the tropics, when the sun shines bright below, with clear weather around.

The presence of the sun in either hemisphere, obstructs considerably the *regularity* and *strength* of the trade wind in that hemisphere, and vice versa.

MONSOONS, or PERIODICAL WINDS, are those which blow half of the year from one quarter, and the other half year from the opposite direction. They blow more steady in the East Indian Seas than in any other place, particularly to the northward of the equator from the coast of Africa to the eastern side of the bay of Bengal; also in the China Sea, but with somewhat less regularity in the northern part of it. Monsoons.

The principal cause of these winds, is from the situation of the land, as connected with the course of the sun, for the extensive coasts of Arabia, Persia, India, &c., being greatly heated when the sun is vertical to them, the atmosphere becomes rarefied there, and a S. W. wind blows from the ocean toward the land to restore the equilibrium. This current of air proceeding from the ocean, being highly charged with moisture in the state of gas, it is gradually condensed into rain, which descends in great quantities upon the coasts of India that front the ocean in a S. Westerly direction. Cause of them;

When the sun returns into the southern hemisphere, the atmosphere, there, becomes greatly rarefied, and by evaporation and cold winds from the northward, the land on the North side of the equator, soon parts with its heat, and the atmosphere over it becomes dense; a N. E. wind or monsoon is then produced in North latitude, blowing toward the heated parts about the equator. This is the dry season on the coasts of India, for the wind blowing from the land brings fair weather; and the rainy season is produced by the wind blowing from the ocean toward the land, which is generally the case on both sides of the tropics.

Were there an extensive tract of land near the southern tropic in the Indian Ocean, pro-

bably a regular N. W. and S. E. monsoon would alternately prevail between that tropic and the equator, similar to the N. E. and S. W. monsoon in North latitude. This we may suppose would be the case, for although the N. W. monsoon in the open sea, seldom extends beyond lat. 8° or 10° S., yet in the vicinity of the East coast of Madagascar and the N. W. coast of New Holland, that monsoon extends several degrees farther to the southward, by the land being greatly heated when the sun is near the southern tropic.

Places where they prevail.

The S. W. monsoon prevails from April to October between the equator and the tropic of Cancer, and it reaches from the East coast of Africa, to the coasts of India, China, and the Philippine Islands; its influence extends sometimes into the Pacific Ocean as far as the Marian Islands, or to about lon. 145° E., and it reaches as far North as the Japan Islands. In the same season, a S. S. W. monsoon prevails to the southward of the equator in the Mozambique Channel, between the Island Madagascar and the coast of Africa, which is occasioned by the conformation of the lands on each side of that channel.

The N. E. monsoon prevails from October to May, throughout nearly the same space that the S. W. monsoon prevails in the opposite season mentioned above; but the monsoons are subject to great obstructions by land, and in contracted places such as Malacca Strait, they are changed into variable winds. Their limits are not every where the same, nor do they always shift *exactly* at the same period.

The N. W. monsoon prevails between the N. E. part of Madagascar and the West coast of New Holland from October to April, and it is generally confined between the equator and 10° or 11° of South latitude, but subject to irregularities. This monsoon seldom blows steady in the open sea, although in December and January it generally prevails, and in these months sometimes extends from lat. 10° or 12° S. across the equator to lat. 2° or 3° North. This is the rainy monsoon to the southward of the equator, and the S. E. monsoon is the dry season.

The S. E. monsoon predominates from April to October in the space last mentioned, and in some places reaches to the equator, or when the sun is near the northern tropic; but this monsoon may be considered as an extension of the S. E. trade following the sun, which recedes backward to lat. 10° or 12° S., when that luminary returns to the southern tropic.

The parts where the N. W. and S. E. monsoons prevail with greatest strength and regularity, are in the Java Sea, and from thence eastward to Timor, amongst the Molucca and Banda Islands, and onward to New Guinea.

Westerly winds are sometimes experienced near the equator, in the Pacific Ocean, a great way to the eastward of New Guinea. And also in the Atlantic Ocean, westerly winds are at times liable to happen near, or a little to the northward of the equator; forming a contra current to the regular N. E. and S. E. trade winds which prevail on each side of it.

Variable winds.

VARIABLE WINDS, prevail in both hemispheres from lat. 28° or 30° to the Poles, but those from West and W. S. W. generally predominate in North latitudes; and those from West and W. N. W., predominate in South latitudes.

The principal cause of the prevalence of westerly winds in high latitudes, is thought to be, from the upper parts of the atmosphere having a motion toward the Poles, contrary to the trade winds; which becoming condensed beyond the limits of the latter, descends to the surface of the earth or sea, and blows from the West toward the East, to restore the equilibrium occasioned by the trade winds. For immediately beyond the limits of these winds, the westerly winds are generally found to prevail.

These westerly winds in high latitudes, are liable to obstructions and changes from various causes, where the influence of the sun is mutable and uncertain in the Temperate Zones: but beyond the Arctic and Antarctic Circles, where a settled frost, and cold atmosphere constantly prevails, strong gales, and sudden shifts of wind, are not so liable to happen there, as at a greater distance from the Poles.

The sun's presence in either hemisphere, has great influence upon the prevailing westerly winds in high latitudes; in the Northern Atlantic Ocean, the wind generally inclines to blow from W. S. Westward in the summer months; and in winter, almost constantly from W. N. Westward between the coasts of Newfoundland and Ireland. In the British Channel, easterly winds often prevail in February, March, April, and part of May; during the other months, westerly winds prevail greatly.

On the N W. coast of America, S. Westerly winds prevail in the summer months; and northerly winds during winter.

In the southern hemisphere, during the summer months, when the sun is near the tropic of Capricorn, the winds are sometimes very variable, but prevail at West and W. N. Westward. In the winter months, they blow mostly from W. S. W. and West, and sometimes from South or S. Eastward. Westerly winds prevail greatly off the Cape of Good Hope, Cape Horn, and Cape Van Diemen, particularly when the sun is near the tropic of Cancer; but on the western coasts which form these promontories, the wind frequently prevails from the southward, when it is blowing strong from the westward off their extremities. And S. Easterly or southerly winds, are *generally* found to prevail more than any other, in February, March, and part of April, in the vicinity of those headlands.

LAND AND SEA BREEZES, may be considered as a kind of *alternating winds*, which are generally experienced in settled weather upon coasts or islands situated between the tropics. They arise from the circumstance of earth being a better conductor of heat than water, and consequently that the land is susceptible of a higher degree of temperature by the action of the sun, than the sea: this increase of temperature during the day, rarefies the incumbent atmosphere, and a current of colder air rushes in from the sea to supply the deficiency, and forms what is called a *sea breeze*. The progress of this breeze is regressive upon the sea, as it commences close to the shore where the motion of the air first inclines to the land, and it gradually extends out to sea; so that vessels close in with the shore, get the regular sea breeze sooner than those which are in the offing. Land and Sea breezes.

After sun-set, the atmosphere over the land becomes cool by evaporation, and at whatever time of the night, it exceeds in density that over the sea, the air takes a motion from the land toward the more rarefied parts over the sea, which is called the *land breeze*. This is a progressive breeze upon the sea, as it begins on the shore, and gradually extends to seaward; and its approach may be sometimes known by an increased noise of the surf, if a ship happen to be near the shore.

These land and sea breezes, extend in some places only to a small distance from the shore, but on the Malabar Coast, in the fair season, where they prevail *probably* with greater regularity than on any other part of the Globe, their influence is perceptible at the distance of 20 leagues from the land.

When the land is greatly heated, and the evaporation not sufficient to cool the atmosphere over it below that of the adjoining sea, there will be no land breeze, and in such case the wind blows mostly from seaward; this may be observed in the Temperate, as well as in the Torrid Zone.

During summer in England when the weather is settled and serene, a gentle breeze from the sea frequently rises with the altitude of the sun, which is strongest after noon when the air over the land is greatly rarefied, and it declines with the setting sun. The evaporation from the land during the night, being in this country, not sufficient to cool the atmosphere over it, below that of the adjoining sea, a land breeze is consequently, seldom experienced in the night.

The temperature of the atmosphere being nearly the same over the land and sea, calms generally prevail in the night, until the sea breeze returns, when the atmosphere over the land becomes heated by the diurnal course of the sun.

Squalls.

SQUALLS, are generally of *three* kinds; that called the ARCHED SQUALL, is frequently experienced, and usually rises up from the horizon in the form of an arch, but sometimes it assumes the appearance of a dense black cloud, particularly when highly charged with rain or electric matter. From the time that the arch or cloud is first seen above the horizon, its motion is sometimes very quick to the zenith, the interval being scarcely sufficient to allow a ship to reduce the necessary sail before the wind reach her, which happens when the cloud has approached to the zenith. At other times, the motion of the cloud is very slow, and not unfrequently it disappears, or is dispersed, the impulse of the wind being then not sufficient to reach a ship. As a general rule, it may be observed, that if there be rain in these squalls preceding the wind, the latter will probably follow the rain in sudden severe gusts; whereas, if the wind precedes the rain, the squalls are seldom so furious, and terminate in moderate showers of rain. This general rule, however, is often interrupted by the operation of local causes. DESCENDING SQUALL, is not so easily discerned as the former, because it issues from clouds which are formed in the lower parts of the atmosphere near the observer; and when clouds are thus formed, they generally produce showers of rain, and successive squalls of wind.* WHITE SQUALL, is not often experienced, but it sometimes happens near to, or within the tropics, particularly in the vicinity of mountainous land. This squall generally blows very violently for a short time, and as it is liable to happen when the weather is clear, without any appearance in the atmosphere to indicate its approach, it is consequently very dangerous.

The only mark that accompanies it, is the white broken water on the surface of the sea, which is torn up by the force of the wind.

Squalls, and also storms, are sometimes progressive, at other times regressive, when obstructed by an opposite wind; or according as the point of greatest rarefaction is situated, which may be seen in the description of the sea breeze.

When a squall is opposed by an opposite wind, its motion is *greatly retarded thereby;* and a ship sometimes in this case, out-runs the squall, and overtakes other ships which are within the limits of the opposite wind.

Progressive winds, when they have an opposite wind to subsue, are frequently preceded many hours by a swell, which extends a great way before them.

Other remarks relative to winds.

In straits or channels formed between high lands, strong winds generally blow directly through them; this is experienced in many parts of the eastern seas, such as the Straits of Shadwan in the Red Sea, the Mozambique Channel, Straits of Macassar and Lombock, also in the entrance of the river St. Laurence in North America, and frequently in the Firth of Forth in Scotland, although the latter is not bounded by *very* high land.

Where shoal coral banks shoot up out of deep water in many places between the tropics, a decrease of the prevailing wind is frequently experienced upon them; for when a steady wind is blowing over the surface of the deep water, no sooner does a ship get upon the verge of a shoal coral bank, than a sudden decrease of wind is often perceived. This is probably occasioned, by the atmosphere over these banks being less rarefied, and cooler by the increased evaporation, than that over the deep water; consequently not requiring so great a supply of air to restore the equilibrium, as the circumjacent parts which are more rarefied and heated. Water in small quantities, parts quickly with its heat, but retains it when in large quantities; in other words, the quantity of water evaporated and cold generated in a given time, is always in proportion to the extent of surface and depth of the evaporating mass: the evaporation, therefore, over shoal banks, is always greater than over deep parts of the sea, and the atmosphere, as well as the surface of the water, proportionally cooler over the former than over the latter.

* This is called the *Nimbus*, by meteorologists, who have distinguished all the various aspects of the clouds, by appropriate names; but this classification, seems too abstruse for the use of seamen.

STORMS, may be classed under three heads; GALES OF WIND, HURRICANES, and WHIRLWINDS. The first of these generally happen beyond the tropics, outside of the limits of Trade Winds; for in high latitudes, gales of wind, or storms, blow sometimes from one direction several days together, particularly during winter. These strong gales prevail mostly from westward, and they are not so liable to shift round suddenly as the storms near the tropics; this however, sometimes happens, which has occasioned the loss of many ships in the Atlantic Ocean, by having some square sails set, consequently not prepared for a sudden change. Gales of wind.

The gales of wind which happen near, and within the tropics, are generally of short duration, liable to veer round suddenly to an opposite direction.

HURRICANES, are seldom experienced beyond the tropics, nor nearer to the equator than lat. 9° or 10° North or South: they rage with greatest fury near the tropics in the vicinity of land or islands; far out in the open ocean, they rarely occur; and when they happen within 10° of the equator, they generally are less violent than nearer to the tropics. Hurricanes.

These are dreadful tempests, in which the wind shifts sometimes suddenly from one direction to that opposite, and rising the sea in pyramids; its violence is frequently so great, as to overcome all resistance, breaking the masts of ships, and tearing up trees by the roots. The velocity of the wind in some violent hurricanes, has been estimated about 80 or 90 miles an hour: and in a pleasant brisk gale, it is about 20 miles an hour. In some places, hurricanes are occasionally accompanied by an earthquake.

Hurricanes happen among the West India Islands, near the East coast of Madagascar, near the Islands of Mauritius and Bourbon, and to the eastward of these islands, within the limits of the S. E. Trade: they are also liable to happen near the coasts of India, particularly in the Bay of Bengal at the changing of the monsoons.

They are called Ty-foongs by the Chinese, and frequently happen on, and near the coasts of China, extending from thence to the eastward of Luconia, and to the N. Eastward as far as the Japan Islands. A description of them will be found in volume second of this work, in the 1st section, under the title "China Sea:" and the hurricanes which happen near the Islands of Mauritius and Bourbon, are described in the section where directions are given for the returning passage from India toward the Cape of Good Hope.

WHIRLWINDS, are sometimes occasioned by high uneven land; when the wind is blowing strong, gusts from the mountains, descend sometimes with a spiral or whirling motion upon the surface of the contiguous sea. But the phenomenon usually known by the name of WHIRLWIND, when seen upon land, and called a WATER-SPOUT when it happens at sea, is generally attributed to an electrical effect; as it happens mostly in warm climates, when black dense clouds appear low in the atmosphere, which, being highly charged with electric fluid, thunder or lightning is mostly experienced with a whirlwind; and at sea, it is almost invariably accompanied by rain or hail. Whirlwinds, or water-spouts.

When a whirlwind or water-spout is observed forming at a small distance, a cone may be perceived to descend from a dense cloud in the form of a trumpet, with the small end downward: at the same time, the surface of the sea under it, ascends a little way in the form of steam or white vapour, from the centre of which a small cone proceeding upward, unites with that which projected from the cloud; and then, the water-spout is completely formed; frequently, however, the acting cause is not adequate for this purpose, and in that case, after the water-spout is partly formed, it soon proceeds to disperse.

There is, in the middle of the cone that forms a water-spout, a white transparent tube or column, which gives it a very dangerous appearance, when viewed at a distance, as it seems like a *stream* of water ascending; but when closely approached, the dangerous appearance

partly vanishes. I have passed close to several water-spouts, and through the vortex of some that were forming, and was enabled to make the following observations.

By an electrical force, or *ascending* whirlwind, a circular motion is given to a small space of the surface of the sea, in which the water breaks, and runs round in a whirlpool with a velocity of 2, 3, to 4 or 5 knots. At the same time, a considerable portion of the water in the whirlpool, is separated from the surface in minute particles resembling smoke, or vapour, with a hissing noise occasioned by the strength of the whirlwind; these particles continue to ascend with a spiral motion up to the impending cloud. In the centre of the whirlwind or water-spout, there is a vacuum, in which none of the small particles of water ascend; and in this, as well as around the outer edges of the water-spout, large drops of rain descend; because in those places, the power of the whirlwind not being sufficient to support the ascending minute particles, they consequently descend in the form of rain.

The vacant space in the centre of the water-spout, seems to be that which has a white transparent appearance, like a column of water when viewed at a distance, or resembling a hollow glass tube. In calm weather, water-spouts generally have a perpendicular direction, but occasionally also, they have an oblique or curved direction, according to the progressive motion given them by the prevailing winds. Sometimes they disperse suddenly, at other times they move rapidly along the surface of the sea, and continue a $\frac{1}{4}$ of an hour or more, before they disappear.

Water-spouts are *seldom* seen in the night; yet, I once passed near to a large one in a cloudy dark night. The danger from water-spouts is not so great as many persons are liable to apprehend, for it has been said, that when they break, a *large body* of water descends, sufficient to sink any ship. This appears not to be the case, for the water descends only in the *form of heavy rain*, where it is broken from the ascending whirlwind; but there is danger in small vessels, of being overset when they have much sail out, and large ships if their topsails are not clewed up and the yards secured, may be liable to have them carried up to the mast-heads by the force of the whirlwind, and thereby lose their masts. It is sometimes thought, that the firing of a gun when near a water-spout will break it, and effect a dispersion; the concussion produced in the atmosphere by the explosion, destroying in such case, the cohesive force of the whirlwind. In the vicinity of water-spouts, the wind is subject to fly all round in sudden gusts, rendering it prudent for ships to take in their square sails.

When a whirlwind happens on land, all the light substances on the surface of the earth within its course, are carried up in a spiral motion by it. I have observed one pass over Canton River, in which the water ascended like a water-spout at sea, and some of the ships that were moored near its path, were suddenly turned round by its influence. After passing over the river, it was observed to strip many trees of their leaves, which, with the light covering of some of the houses or sheds, it carried up a considerable way into the atmosphere.

Marine Barometer useful in high latitudes, to indicate storms.

MARINE BAROMETER, is a very useful instrument in *high latitudes*, by assisting navigators to anticipate approaching storms: previous to a hard gale of wind, there is generally a great fall of the mercury, and even *near the tropics*, the fall of it before a storm or hurricane, is usually considerable. Within 9° or 10° of the equator, there seldom or never is a hurricane or storm of *long* duration, but whirlwinds, and hard squalls of a *few* hours continuance, are sometimes experienced within these parallels of latitude, without any fall of the mercury. Indeed, the barometer is of little use as a guide in prognosticating storms which may happen within the tropics; except before a severe hurricane, there is often a considerable fall of the mercury, when the latitude is not less than 14° or 15° North or South.*

* I have lately engraved an atmospherical register for facilitating the use of the Marine Barometer; by exhibiting its monthly range in each of the 12 sheets which the register contains, with an introductory sheet by way of example: this register is constructed for a period of 3 years, and is much more convenient than the usual method of registering the height of the mercury by cyphers.

It is proper to observe, that in the open ocean between the tropics, in settled weather, there is a *flux* and *reflux* in the atmosphere *twice* every 24 hours, resembling the tides of the sea; but these atmospherical tides depend upon the sun's influence and the rotation of the earth, and do not follow the motion of the moon. The rise and fall of the mercury, in consequence of these tides, is about 6 or 7 of the hundred parts of an inch, in settled weather near the equator, the high station happening about 11 o'clock in the morning and 11 o'clock at night; and the low station about 5 o'clock in the morning and evening. The regularity of this flux and reflux of the atmosphere, is *obstructed by land*, but in the ocean it prevails to lat. 26° North and South; and in fine steady weather, it may be perceived as far as lat. 30° or 32° North or South.* In high latitudes, the motion of the mercury in the barometer, like the winds, is mutable and uncertain; but previous to a storm or gale of wind, there is commonly a great fall, and the mercury begins to rise before the conclusion of the gale, sometimes even at its commencement, as the equilibrium in the atmosphere begins to be restored.

Atmospherical tides.

Remarks relative to the rise of the marine barometer, in foretelling the changes of weather.

Although the mercury sinks lowest before high winds, it frequently sinks considerably before a heavy fall of rain; and when the mercury stands low, the air is light and deprived of expansibility or elasticity, therefore, not capable of supporting much gaseous moisture: at such periods, consequently, rain generally falls. The mercury also sinks on the approach of thunder and lightning, or when the atmosphere is highly charged with electric matter.

In serene settled weather, the mercury commonly stands high, also in clear frosty weather. The mercury in the open sea, is in general inclined to rise with easterly, and fall with westerly winds. It is likewise necessary to remember, that in the northern hemisphere in the open sea, the mercury rises with northerly and falls with southerly winds; because the former coming from the frozen parts near the pole, are more dense than the latter, which blow from the equatorial regions. In the southern hemisphere, the contrary takes place, for there, the mercury rises with the cold southerly winds, and falls with northerly winds. These effects are more particularly observed in high latitudes in the ocean, for obstructions and irregularities will always happen near land; because there, the rarefication and expansibility of the atmosphere, is not so equal as over the ocean.

After very warm and calm weather, in winter particularly, a storm is likely to follow; or at any time that the atmosphere is *greatly heated* above the *medium* temperature.

By proper attention to the marine barometer, the experienced navigator may often be enabled to anticipate the changes of weather; and in some seas, he may by its indications, even *take in*, or *let out* reefs in the night. It is also advisable to observe the phases, and progress of the moon, for it is reasonable to suppose, the influence of that planet upon the atmosphere must be considerable, in penetrating through it to the surface of the ocean.†

* An abstract of 22 months observations with two marine barometers, is recorded in the Philosophical Transactions of the Royal Society, for 1805, wherein I have described more fully this flux and reflux of the atmosphere in different parts of the globe, from actual observation.

The influence of the atmosphere upon the mercury in the barometer, may perhaps be partly attributed to the expansible force of the air, as well as to the pressure arising from its gravity. If a barometer be placed near the perpendicular side of a high hill, wall, or building, when the wind is blowing violently against it, the mercury will *probably* remain nearly at the same height as if the barometer stood in an open place; but the density or gravity of the atmosphere ought to be considerably augmented by compression near the wall, on account of the obstruction it presents to the velocity of the wind; consequently the mercury should be more elevated in a barometer placed there, than it would be were it fixed in an open situation at the same time, if the action of the atmosphere upon the mercury were solely the force arising from its gravity.

† Although some persons are of opinion, that the moon has no influence upon the atmosphere, or even upon the surface of the sea in the production of tides or currents, there is great reason to think, that both are considerably disturbed by that planet; particularly, if the experience and observation of many medical practitioners and others be admitted, that the influence of the moon upon the *human body*, is frequently perceptible in places situated within, and near the tropics.

Supposed influence of the moon upon the same.

CHANGE of the MOON, in most parts of the globe, is more liable to be accompanied by stormy weather than the full moon; and blowing weather prevails more in dark nights, than when much of the moon's disc is illuminated. By looking into the Nautical Almanac, the lunar points will be seen. When the semi-diameter and horizontal parallax of the moon are greatest, she is in that part of her orbit nearest the earth, called the Perigee; and the Apogee is, when the semi-diameter and horizontal parallax are least, the moon being then at her greatest distance from the earth.

An ingenius Frenchman has given a table of the chances, of the changes of weather liable to happen at the *lunar points*, which he makes 10 in number. The prineipal of these lunar points are Perigee, Apogee, Change, and Full; and the changes likely to happen with these points, he thus marks.

The Perigee of the moon, is likely to be accompanied by the greatest changes which happen from a *single* lunar point.

The new moon, next to the Perigee, is likely to be accompanied by the greatest changes of weather.

At new moon coinciding with the Perigee, the greatest changes may be expected, or 33 to 1 that a change of weather happens.

New moon coinciding with the Apogee, 7 to 1 that a change happens.

Full moon coinciding with the Perigee, 10 to 1 that a change happens.

Full moon coinciding with the Apogee, 8 to 1 that a change happens.

If new moon and Perigee coincide, when the sun is on the equator, the chance of a change of weather must be great.

If with the autumnal equinox, any of the lunar points coincide, there will be a great chance of a Ty-Foong on the South coast of China, or of a storm in other parts situated near the tropic of cancer.

The changes of weather do not happen precisely at the lunar points, but like the tides, vary a little in time from these points; for a change of weather, often precedes 1 or 2 days the change of the moon.

To measure the velocity of the wind on land,

VELOCITY of the WIND, may be measured in different ways, and tolerably correct by the motion of the detached clouds, when they are passing near the surface of the earth, for in such case, their velocity will be nearly (or probably a little less than) that of the wind. So that by measuring the interval of time betwixt the passage of the shadow of a cloud over two places, and comparing it with the distance between them, the velocity of the clouds moving with the current of wind, may be ascertained.

and at sea.

This may also be done at sea when two ships are at a considerable distance from each other in the direction of the wind, and sailing at the same rate on the same course: when the shadow of a cloud passing under the sun is observed to darken the sails, the time may be noted by a watch with a second hand, and when the shadow of the same cloud darkens the sails of the other ship to leeward, the time ought also to be marked. The distance between the ships may be measured by sound, if they are 2 miles separated, one of them firing a gun by signal, that the other may be enabled to note the time from seeing the explosion to hearing the sound; and the interval of time compared with the velocity of sound, or the rate at which it moves along the surface of the earth, 1140 feet in a second,* will give the distance between the ships; with which compare the interval of time employed by the shadow of the cloud in passing from the one ship to the other, and it will show the velocity of the wind or

* Experiments lately made by Mr. Millington, make the velocity of sound to be nearest 1130 feet in a second, accelerated or retarded *a little* by the direction of the wind; but the state of the barometer, made no difference in its velocity.

clouds, for that distance. If two ships are near each other and the height of their mast-heads is known, the angle of one of their mast-heads may be measured by sextant, and used as the base of a right angled triangle, to obtain the distance between them; which cannot be correctly ascertained by sound, unless they are at a considerable distance from each other. In measuring the velocity of the wind on land or at sea, by the motion of the clouds, the mean of several observations ought to be taken, in order to approximate near to the truth.

The velocity of the wind may be measured pretty correctly on shore by a common kite, letting it run out a considerable quantity of loose line, and marking the intermediate time by watch; then by comparing it with the quantity of line run out, the velocity of the wind may be nearly obtained, which will be rather less than the truth: because the kite having a line fixed to it, and descending by its gravity, it will be retarded a little in the horizontal motion; consequently, it will not have exactly the same velocity as the wind.

WAVES of the SEA, are in general governed by the wind, and come from the same direction, when the latter has continued steady for a considerable time; but this regularity of the waves, is often obstructed by local causes. Sometimes they run contrary to the wind; at other times, several waves are seen moving in various directions, running into, and crossing each other at different angles. During light winds, when a strong current is prevailing, there is generally a short confused swell running in the *opposite* direction to the current, by attending to which, experienced navigators may often foretell the direction of the latter. Waves of the sea.

There is reason to think, that few observations have been made at sea relative to the velocity of the waves, which is generally greater in the ocean than in shoal water near land; because here, the mixed particles of sand and mud, and the friction occasioned by them and the ground, must considerably retard the regular progress of the waves.† How to measure their velocity.

The velocity of the waves may be easily measured by the common log, when a ship is running with them. To do this, when there is several knots of line out, or after the log is hove to obtain the velocity of the ship, mark the time to the nearest second by watch when the log is lifted up upon the top of any wave, and mark the time when the stern of the ship is lifted up by the same wave: the length of line between the stern and the log, will be the measure of the apparent velocity of the wave for the interval of time, to which must be added the velocity of the ship, and the sum will be the *true* velocity of the wave.

It may also be measured, when 2 ships, or a boat and ship, near each other, are sailing on the same course with equal velocity, or when they are stationary during a calm. This is done by taking the angle of one of the ships mast-heads with a Sextant, the height of it being known from the deck or above the surface of the sea, and correction must be made for the height of the eye above water. In this right-angled triangle, the perpendicular or height of the mast, and the angles are given, to find the horizontal base line or distance between the ships, as in the case mentioned above, for ascertaining the velocity of the wind. At the time the angle of the ships mast-head is taken, mark the time when the first ship is lifted up by a wave, and also the time when the other ship is lifted up by the same wave, and the distance between them, if they are both in a line with the course of the waves, will be the measurement of the velocity of that wave for the interval of time. In order to approximate

† Dr. W. H. Wollaston, late Secretary to the Royal Society, found the velocity of the waves to be nearly 60 miles an hour by some observations taken at anchor in one of the Leith smacks, close to the East coast of England. Captain J. Tate, at my request, measured the velocity of the waves in the China Sea, when sailing at the rate of 8 miles per hour right before the wind, during the northeast monsoon; and he made their velocity only 16 miles an hour, which at this time consisted of large broad waves or swells, at a considerable distance from each other. These are observed to move with greater velocity, than short waves produced by the wind actually blowing. A greater number of observations are therefore yet wanting, to determine correctly the *mean* velocity of the waves of the sea.

near to the truth, the mean of several observations should be taken; the velocity of the waves may be measured in this manner, although the two ships are not in a direct line with the waves' course, by taking the angle between one of the ships and the course of the waves. In such case, the distance between the ships, will be the hypotheneuse of a right angled triangle, which, with the angles are given, to find the opposite side or perpendicular; and this will be the measurement of the velocity of the waves, for the interval of time marked by watch.

These methods of measuring the velocity of the winds and waves, are stated, *principally* with the view of exciting young navigators to rational amusement during a leisure hour; and that they may by practice, improve themselves in the knowledge of maritime surveying, so essential to skilful navigators.

Luminous appearance of the sea.

LUMINOUS APPEARANCE of the SEA,* which frequently happens, more particularly between the tropics or near them, in different parts of the globe, is produced from various causes, not generally known to navigators; although it has been noticed by Aristotle and Pliny, and by several naturalists in different ages, since their time.

Of various kinds of marine animals which emit light, the following appear to be best known.

1st. The Cancer Fulgens, discovered by Sir Joseph Banks, resembling the common shrimp, but smaller; this I have often seen sparkling at the edge of the sea in dark nights, during the southwest monsoon on the Malabar Coast; which after being carried in a handful of sand, to be examined with a microscope, continued to emit light, till life was extinct.

2nd. Limulus Noctilucus, discovered by me in the Arabian Sea, on the 12th of April, 1798; perceiving several luminous spots in the sea after day light, and supposing them to be animals, I went in the boat and caught one, with some difficulty, as it endeavoured to avoid my hand. It proved to be an insect somewhat resembling in appearance the wood-louse, and was about $\frac{1}{3}$ of an inch in length; which on examination with the microscope, appeared to be formed by sections of a thin crustaceous substance, and while any fluid remained in the animal, it shone brilliantly like the fire fly.

3d. The Medusa Pellucens, (or one of the species of blubber-fish) discovered by Sir Joseph Banks to be luminous, is a zoophyte, the most splendid of the luminous inhabitants of the ocean: the flashes of light emitted during its contractions, are at times so vivid, as to affect the sight of the spectator.

Several other species of luminous medusa, were discovered by Mr. Macartney, on the coasts of Kent and Sussex, of various forms and sizes, some of them very minute, not larger than the head of a small pin. Forster and other naturalists, have also discovered several different kinds of luminous marine animals, besides those already mentioned.

Although the luminous appearance of the sea is generally produced by living animals, nevertheless, some kinds of dead matter seem to give it a similar aspect at times, such as the exuviæ of fishes, or putrefactions.† I have sometimes carefully examined the water of the sea when it was luminous, and could not discern any animation, but it appeared only to contain small particles of matter of a *dusky straw colour,* which dissolved with the slightest touch of the finger; at other times, the sea was evidently illuminated by small sparkling animals.

* An excellent paper on luminous marine animals, by J. Macartney (now professor of anatomy at the university of Dublin) was published in 1810, in part 2d. of the Philosophical Transactions of the Royal Society of London.

† Putrid fish are known to shine in the dark; this I have seen strangely exemplified at Bombay, where great quantities of a glutinous species of fish, resembling white-bait, are caught, and spread on the fields to be dried by the sun. These had a novel appearance in dark nights, the whole extent of the ground exhibiting a continued sheet of shining light.

A peculiar phenomenon is sometimes seen in the Banda Sea, and other parts of the Eastern Seas; and particularly in the Arabian Sea, between the East coast of Africa and the coast of Malabar, during the rainy monsoon. This I had an opportunity of once observing at midnight, when the weather was cloudy, and the sea particularly dark, but it suddenly changed to a white flaming colour all round. This phenomenon bore no resemblance to the sparkling or glowing appearance observed on other occasions in seas near the equator, but the sea was of a splendid colour, white as milk, which did not continue more than ten minutes, when it resumed its former darkness.

This singular phenomenon, has been also observed by several persons, near the Malabar Coast and in other parts, and it appears to be in a great degree elucidated by the observations of Mr. Langstaff, made in a passage from Port Jackson toward China. About half an hour after sunset, the sea changed to a milky appearance, and the ship seemed to be surrounded by ice covered with snow. A bucket of water being hauled up, and examined in the dark, a great number of globular bodies were discovered, each about the size of a pin's head, *linked together;* the chains thus formed did not exceed three inches in length, and emitted a pale phosphoric light. This extraordinary appearance of the sea, was visible two nights; but as soon as the moon exerted her influence, the sea resumed its natural dark colour, and exhibited *distinct glittering spots*, as at other times. Mr. Langstaff's observations seem to shew, that the *diffused* light of the sea is produced by an assemblage of minute meduśa on the surface of the water.

Mr. Macartney, has seen streams of light on the surface of the sea, at different times, on the southern coasts of England; and upon examination, a gallon of sea water in a luminous state after being strained, left above a pint of small medusæ. He has also, under such circumstances, perceived the sea to yield more support in swimming, and the water to taste more disagreeably than usual.

The surface of the sea is usually more subject to be luminous after long calms and sultry weather than at any other time; for then, it abounds with minute medusæ and small marine animals generated in calm weather, which render it fetid both to the smell and taste. At such times, the sea becomes easily illuminated, by the least disturbance of a squall, or any thing that produces agitation or friction on its surface. Porpoises, dolphins, dorado, or other fishes, therefore, often reflect a vivid light when swimming near the surface, which has induced some persons to ascribe the property of emitting light to several fishes; but upon close examination, the bodies of those fishes were found to be covered with minute spherical particles which adhered to their surface, apparently the same that illuminated the whole of the sea at the time, and in all probability were a minute kind of medusa.

The small particles of matter of a *dusky straw colour*, mentioned above, which were examined by me (but not with a miscrocope) and appeared destitute of animation, might nevertheless, have been the minute medusa discovered by Mr. Macartney, and called by him Medusa Scintillans, which he thinks to be the *most frequent* cause of the luminous appearance of the sea. When at Herne Bay, a small watering place on the northern coast of Kent, in October, 1804, he observed the sea to be luminous several nights, and took up a considerable quantity of the water, which emitted no light when at rest; but on the slightest agitation of the vessel which contained the water, a brilliant scintillation was perceived towards the surface; and when the vessel was suddenly struck, a flash of light issued from the top of the water, in consequence of so many points shining at the same moment. Having strained a quantity of the luminous water, a great number of transparent corpuscles were obtained upon the cloth, and the water which had been strained, did not afterward exhibit the least light. Some sea water that had been rendered particularly clear by repeated filtrations, was then put into a large glass, and having floated in it a fine cloth, on which he had previously collected a number of luminous corpuscles, several of them were liberated, and became distinctly visible in their natural element, by placing the glass before a piece of dark

coloured paper. They were observed to have a tendency to come to the surface of the water, and after the glass was kept steady sometime, they were found congregated together, and when thus collected in a body, they had a *dusky straw colour*, although individually they were so transparent, as to be invisible, except under particular circumstances. In the air, they appeared like globules of water; they were more minute than the head of the smallest pin, and upon the slightest touch, they broke and vanished from the sight. The motions of these creatures in the water were slow and graceful, not accompanied by any visible contractions of their bodies; and after death they always subsided to the bottom of the vessel.

A beautiful illumination of the surface of the sea, is sometimes reflected from the broken water or waves at the head of a ship, occasioned by her velocity through the fluid, when it abounds with those animals which emit light. Once I experienced a splendid instance of this kind near the equator, when the quantity of gleaming light reflected from the waves under the weather bow of the ship, against the white foresail, was sufficient to enable me to read any pages of a book, if not printed with a very small type, although the night was otherwise dark at the time.

Temperature of the sea.

TEMPERATURE of the SEA, is a phenomenon of nature, hitherto but little investigated, although it appears to be closely united with the improvement of nautical science; the following observations, may, therefore, be not altogether unimportant to navigators.

It has been thought, that the temperature of the ocean was subject to little mutability, particularly between the tropics; but the temperature of the surface of the ocean, is affected by changes of the superincumbent atmosphere, as well as by other local, or adventitious causes.

1st. When the atmosphere is cold, a portion of its temperature is imparted to the surface* of the ocean, by which the temperature of the latter is diminished; and in calm settled weather, the maximum of temperature of the sea has been experienced about one or two hours after mid-day, and the minimum about sun-rise in the morning.*

2d. Tempestuous weather, rises the temperature of the sea, which is *probably* produced from the agitation or friction of the broken waves, by the particles of water rubbing against each other.

3d. Currents, have a more powerful influence than any other cause, in changing the temperature of the surface of the ocean; and it may be here observed, that the same rule is applicable in this case, as already stated in regard to winds, under the articles *Trade Winds* and *Marine Barometer*, viz. That in either hemisphere, a current proceeding from the cold polar regions toward the equator, diminishes the temperature of the sea; whereas, a current running from the inter-tropical regions toward either pole, rises its temperature. It is surprising how long the great bodies of currents preserve their original temperature; that known by the name of the Gulf Stream, loses only two degrees of its original warm temperature in running 1300 miles into a cooler climate, it being 81° in lat. 39° N. in summer; and in passing the bank of Newfoundland, it is several degrees warmer than the neighbouring sea in its vicinity; by which the experienced navigators here, and off the North American Coast, are enabled to know when they get into the Gulf Stream, merely by drawing a bucket of water, and feeling its temperature.

4th and lastly. The depth of the sea, appears also to have a great influence on the temperature of its surface, for the immense body of water contained in the ocean preserves its heat: whereas, in places of little depth, the surface of the water is cooled by increased evaporation.† The temperature of the ocean, therefore, ought to be higher than that of seas

* By the experiments and observations of Dr. John Davy, during a voyage to Ceylon, brother to that justly celebrated Philosopher, Sir Humphrey Davy.

† See the sequel under the article *Squalls*, in a preceding page.

which have little depth of water, in the same parallels of latitude. This seems to be verified by the experiments and observations of Dr. John Davy, during his recent voyage to Ceylon; as in approaching the land of Table Bay, at the Cape of Good Hope, the temperature of of the sea decreased 2°, and it also decreased 2° when the Island of Ceylon was closely approached, although the bank of soundings does not extend far out from either of these places. Were the temperature of the sea, as well as that of the atmosphere, conjointly registered in the journals of navigators, several times, every 24 hours, it would assist greatly the improvement of nautical science; and the proximity of land, or shoal banks, might *probably* be ascertained, by carefully observing the temperature of the sea.

Currents. CURRENTS, or TIDES, are generally experienced to prevail more or less, on most parts of the surface of the ocean. Where trade winds or monsoons blow steady, the current runs mostly with the wind: but at times, no current is experienced, and sometimes it sets contrary to the prevailing wind.

In high latitudes, in the open ocean, the current seldom runs so strong as in the vicinity of the equator, for here, it is very changeable, running sometimes at the rate of from 20 to 60 miles in 24 hours, in parts of the Pacific and Indian Oceans.

The current near the equator, and also in most places of the open sea, sets more frequently to the West than to the eastward; and when the current is running in one direction on the surface, it is sometimes running in an opposite, or oblique direction underneath. Therefore, the common method of trying the velocity and direction of the current in a boat, by sinking a *kettle* or *pot* to the depth of 60 or 70 fathoms, is seldom found to agree with the admeasurement of the same by chronometers. But since navigation has been improved by the use of the latter, the direction and velocity of currents are correctly ascertained.

Tides. The tides in high latitudes, *generally* rise and fall more than in low latitudes, and it has been said, that the perpendicular flux and reflux was *very little* within the tropics, which is not *always* the case. At the head of the gulf of Cambay, in lat. 22° N. the perpendicular depth of the rise and fall of the tides is from 30 to 36 feet at the full and change of the moon. At the same times, it is 20 and 21 feet in Surat Road; and from 15 to 17 feet in Bombay Harbour.

In the gulf of Martaban, which is *far within* the tropics, the perpendicular depth of the rise and fall of the tide, at the full and change of the moon, is 23 and 24 feet, and off Rangoon Bar about 20 or 21 feet.

In Gaspar Straits, within $2\frac{1}{2}$° of the equator, there is sometimes from local causes, a rise and fall of 16 or 17 feet in the springs; but the rise and fall of the tide, is *seldom* so great as this, in places situated near the equator.

Although in most places, the tide flows twice every 24 hours, this is not universally the case within the tropics,* for amongst several of the eastern islands, the tide flows only once in 24 hours: the passage of the moon over the meridian, generally makes high water at these places; but in some parts, the tide is highest when the moon is near, or in the horizon.

MAGNETISM, is one of those phenomena of nature, which seems to elude the definitions of science; several hypotheses indeed have been formed, and many attempts made to discover its elementary principles, yet they appear to be still very imperfectly known. Some philosophers are of opinion, that a great central magnet situated within the earth, or in the internal part of our globe, is the cause of all the magnetical influence; while others consider this cause to be merely atmospherical. But the productive cause of magnetism, seems neither confined within the surface of the earth, nor to the atmosphere, as both terrene and atmospherical matter are known greatly to affect the magnetic needle. Productive causes

* In many places far beyond the tropics, the tide likewise flows only once in 24 hours, particularly on the southern coast of Van Diemen's Land; but at Port Dalrymple on the North coast, the tide flows twice in 24 hours.

1st. Many of the masses of rocks or mountains, which form a considerable portion of the earth, are partly composed of metallic matter, and exert a powerful magnetic influence.

2d. The rays of the sun, have an influence on the needle, producing a *diurnal* variation, which has been observed to increase progressively* with the altitude of that luminary after sun rise.

3d. Electricity seems also to be nearly allied to magnetism, as its influence is great upon the needle.

4th. The Aurora Borealis, which is considered to be an electrical phenomenon, has also a wonderful effect upon the magnetic needle; and it appears to be attracted by several other secondary causes.

Hypothesis of Churchman and Walker.

Mr. John Churchman, (an American) member of the Imperial Academy of Sciences, St. Petersburg, and Mr. Ralph Walker, of Jamaica, appear to have published nearly at the same time, an ingenious hypothesis, with a view of solving all magnetical problems, relating both to the vertical and horizontal declination of the needle. In a diagram of the two hemispheres, on the plane of the equator drawn by Mr. Walker upon this principle, there are two magnetic poles, represented at different distances from the poles of the earth, and revolving round the latter in unequal periods of time. The North Magnetic Pole is placed for the year 1794, in lat. 71° N., lon. 80° W.; the South Magnetic Pole in lat. 65° S., lon. 130° E.; and by the intersections of the magnetic meridians with the terrestrial meridians, the variation of the needle might be found by inspection on these hemispheres, for all places on the surface of the globe, were the positions of the magnetic poles well ascertained and correctly laid down, and the needle not subject to aberrations from various causes already mentioned. But exclusive of the perpetual aberration of the needle from *permanent* causes of nature, it is likewise subject to *adventitious* and *local* attractions, which will always, unfortunately, operate in a considerable degree, against the accuracy of any theoretical solutions.

Mr. Churchman, states the periodical revolution of the North Magnetic Pole round the North Pole of the earth to be 1096 years; and the revolution of the South Magnetic Pole round the South terrestrial Pole to be 2289 years, its motion being much slower than that of the North Magnetic Pole, which is the cause of perpetual irregularities of the variation of the needle. He is of opinion, that when one of the Magnetic Poles is in the zenith of any place, *magnetical tides*, or great inundations will there be experienced; and when the Magnetic Pole is far distant from any place, the sea will recede, and alluvial land will be formed. Mr. Walker, exclusive of his diagram for shewing the horizontal declination of the needle, has drawn likewise two hemispheres on the plane of the equator, for shewing the vertical declination or dip of the needle for all places on the globe; and besides his improvements on steering compasses, he has invented a meridional compass for shewing the quantity of variation by inspection at any time of the day.†

Variation of the compass.

VARIATION of the COMPASS, when mentioned in this work, is intended *only* for the navigator to make proper allowance in *steering* from one place to another, and not as a *guide* for *estimating* the longitude, which was practised about 30 and 40 years ago by mariners, before the use of chronometers and lunar observations became general.

In places where the variation changed quickly, in sailing nearly on a parallel of latitude,

* This I have experienced several times during fine weather at sea, in observing a series of azimuths; commencing when the sun's altitude was 3° or 4°, and continuing the observations until it was 25° or 30° above the horizon. The diurnal variation of the needle, has been long known, and often observed upon land.

† Mr. J. Garnett, an ingenious Philosopher and Astronomer, who has resided in America these 20 years, and superintended the publication of an Astronomical Ephemeris there, states, that he uses the common ring dial for the same purpose at sea as well as on land, which shews the *true* meridian within 1° of the truth, at any time when the sun's altitude is not too great; and consequently the variation of the needle from the *true* meridian.

navigators were *formerly* eager to embrace its aid as an approximation to the true longitude; but compasses being subject to many errors from *various causes*, the longitude ascertained by means of the variation, could never be trusted to, with any reasonable degree of confidence. The variation of the needle is in a state of continued change in most places of the globe, and there is also a *diurnal* and *annual* variation of the variation; besides, the same compasses will alter when taken from one ship into another, and if shifted to different situations in the same ship. And in some places of the globe, although a compass be fixed stationary in a ship, the needle seems to be subject to an *aberration of several degrees*, proportionate to the angle that the ship's head makes with the magnetic meridian. THIS ABERRATION OF THE NEEDLE, Captain Flinders constantly experienced during his survey of the coasts of New Holland, which is recorded in the Philosophical Transactions of the Royal Society, for 1805. With the compass placed a-mid ships in the Investigator, the bearing of points of land on the South coast of New Holland, taken immediately before and after tacking, differed sometimes 8° or 9° when the ship's head was changed nearly from East to West; but there was little or no difference, when the direction of the ship's head was North or South. This difference in the direction of the magnetic needle from its *mean* state, was easterly when the ship's head was West, and westerly when it was East. When the ship's head was North or South, the needle continued in its mean state, and shewed a variation from the *true* meridian, nearly equal to the medium between what it shewed when the ship's head was East and when West; and the aberration of the needle, was nearly proportionate to the number of points which the ship's head was from the North or South.

Subject in some places to an aberration, from the change of a ship's head.

This aberration of the needle arising from a change of the ship's head, varies in different ships at the same place, according to their size, and the quantity of iron they contain, and it appears to be greatest in small ships: but in places near the equator, where there is little variation, this aberration cannot be perceived, for it *seems* to increase in proportion to the distance from the magnetic equator, toward the poles in both hemispheres.

Captain Flinders, was of opinion, that the magnetism of the earth, and the attraction of the iron in a ship, acted as a compound force, in producing the error of variation by the change of a ship's head; and he thought, that *the error at any direction of the ship's head, would be to the error when her head was East or West*, at the same dip of the needle; *as the sine of the angle between the ship's head and magnetic meridian, was to the sine of eight points, or radius.*

That this law might be verified, experiments were made by order of the Board of Admiralty, at Plymouth, Portsmouth, and Sheerness, Captain Flinders being present at the two latter ports, when a series of observations were made in five different vessels, which gave the following results.

1st. When the compass was placed *at* or *near the binnacle*, the North point was attracted forward in all the ships; but the quantity of error produced, on one side when the head was East, and on the other when West, varied from 0° 21′ to 6½°, which was at this time greatest in small ships.*

2d. When the compass was placed in *other parts* of the different ships, the attraction was sometimes forward and sometimes aft; but always aft at the forecastle. The error at some of the stations was greater than at the binnacle, and at others less.

3d. On the upper deck of a ship of war, three places of different attractions were experienced; the first near the foremast; the second or central attraction, near the mainmast; and the third or aftermost attraction, close to the stern. And *generally* two neutral stations

* Mr. Bain, found the error in the English Channel very great in the Sybille Frigate, amounting to 9° & 10°, when the ship's head was changed from East to West.

were found on the midship line, one of which was between the fore and mainmasts, and the other near the stern.

Neither the exact places of the midship attractions, nor of the neutral stations, can be known without experiment made in each ship; nor otherwise can the points of no difference be known, nor what will be the greatest difference, nor even which way the needle will be certainly attracted; so varied is the magnetism in different vessels.

5th. The errors, however, were least when the ship's head was at, or near to North or South, and greatest at, or near to East or West; and as the head was made to deviate from the points of least error towards the greatest, the increase of error was found to be *in proportion to the sines of the angles of deviation.* This verified the law, before deduced from analogy, which was reduced into practice as follows. It has already been observed, that in the Northern Hemisphere, when the ship's head is East, the North end of the needle will be attracted or drawn forward to the *right* or eastward of North; and it will be drawn forward to the *left* or westward of North, if the ship's head be to the West.

In confirmation of this, when the Investigator was off the Start Point on the 20th of July, 1801, in lat. 49° 50′ N., lon. 3° 52′ W., where the dip was 72° N., several azimuths were taken with the ship's head at West, which made the variation 29° 32′ W., when the *true* variation was known to be nearest 25° 40′ W., giving an error 3° 52′ in excess of westerly variation for eight points deviation of the ship's head, or nearly equal to $\frac{1}{15}$ part of the dip, the decimal expression of which is ,0537.

On the 29th of August, in lat. 5° N., lon. 17° W., when the dip was 29° N., the error of variation observed was 1° 31½′ for eight points deviation of the ship's head from the meridian, or a little more than $\frac{1}{19}$ part of the dip, its decimal expression being ,0526, the mean of which, and the above ,0537, equal to ,0531, which call ,053. This will be the *common multiplier* to the dip, for obtaining the radius or error of eight points, in every situation within the Northern Hemisphere.

In the Southern Hemisphere, between lat. 14° S., and 40° S., lon. 123° E., to lon. 153° E., where the dip was found to vary from 43° to 67° S., the error of variation for eight points deviation of the ship's head from the magnetic meridian, was from 2° 8′ to 3° 28′; this error being 2° 8′ when the dip was 43° S., and 3° 28′ when the dip was 67° S. The mean error, therefore, for eight points deviation of the Investigator's head on either side of the magnetic meridian, was very nearly $\frac{1}{20}$ part of the dip; and ,0498 its decimal expression, call ,050, is the *common multiplier* to the dip, for obtaining the radius of error, or that of eight points, at any situation in the Southern Hemisphere.

Rules for correcting the error of variation produced by a change of the ship's head.

With these data, the following method was used in correcting the variations, to what it is presumed they would have been, if observed with the ship's head in the magnetic meridian.

With the dip of the needle, as near as it could be known, and the *common multiplier*, the radius or error for eight points was obtained: with this, taken as a *distance*, and the direction of the ship's head as a *course*, the correction was found in the *departure* column of the traverse table; and being applied to the observed variation, either to the right or left, according as the dip was North or South, and the ship's head on the East or West of the meridian, it gave the true variation.

EXAMPLE 1st.—The Dip being 66° *South*, and the ship's head W. by S., the variation was observed to be 5° 11′ East; required the *true* variation?

Examples.

The Dip 66° multiplied by ,050 (the common multiplier for South Dip) gives 3°, 300 in degrees and decimal parts,* or 3° 18′ which is the error for 8 points equal to 198′.

In the table, with the course 7 points (or direction of the ship's head) and the distance

* To find the minutes for the 300 decimal parts, say, is 1000 decimal parts is to 60 minutes of a degree, so is 300 parts to 18 minutes.

198′, in the departure column will be found 194′ equal to 3° 14′ the correction for 7 points deviation of the ship's head. Then, as in South Dip, the South end of the needle was drawn forward, or in this case to the West, and the North end of it went to the East, the East variation observed, was therefore too great, and must be reduced 3° 14′: from the observed variation 5° 11′ E., subtract 3°14′ correction, and there remains 1° 57′ East, the true variation.

Had the North end of the needle dipped, and all other circumstances been the same, the correction 3° 14′ would have been additive; as it would have been also, had the ship's head been E. by N. or E. by S. with South dip, instead of W. by S.

EXAMPLE 2d.—Suppose that with the ship's head W. S. W., the observed variation was 29° 12′ West in the English channel, where the dip is 72° North; and it be required to know what variation is to be allowed upon a set of bearings taken when the ship's head was N. E. ½ E.

To find the *true* variation.—Multiply the dip 72°, by ,053 (the common multiplier for North dip) gives 3°, 816 equal to 3° 49′ the error for 8 points, or 229′.

With the course 6 points (W. S. W.) and distance 229′ the departure will be 212′, or 3° 32′ correction for 6 points.

Being in North dip, the North end of the needle was drawn forward, that is westward in this case, when the ship's head was W. S. W., and the West variation observed was too great; therefore, from 29° 12′ observed take 3° 32′ correction, and the remainder 25° 40′ will be the *true* West variation.

To find from thence, the correction to be allowed when the ship's head was at N. E. ½ E.

With the course 4½ points and distance 229′, the departure is 177′ or 2° 57′ correction for the ship's head at N. E. ½ E.

When the ship's head was at N. E. ½ E., the North end of the needle at the binnacle was drawn eastward, and the West variation consequently less than the *true;* therefore, from the *true* variation 25° 40′ subtract 2° 57′ correction, the remainder 22° 43′ is the variation to be allowed to the bearings taken when the ship's head was at N. E. ½ E.; as deduced from 29° 12′ West variation observed.

This operation, Captain Flinders observes, may at first seem complex and tedious; but when a common multiplier is once obtained, and the principles of its use understood, it will be found nearly as easy as computation of a meridian altitude for the latitude, and the accuracy required is generally much less. The dipping needle, appears, however, an instrument, too delicate to be used with accuracy at sea, and therefore, one of the principal arguments necessary to find the error of variation by the foregoing rule, can seldom or ever be obtained at sea: but probably this error depends more on the *horizontal* declination of the needle from the true meridian, than it does on the *dip*.

Captain Vancouver's remarks.

Captain Vancouver, (as well as Captain Flinders) in steering with the ship's head to the westward out of the English channel, observed the variation to be about 4° greater than the truth, or from 28° to 29½° westerly.

Mr. Bain's remarks.

Mr. William Bain, a Master in the Royal Navy, has lately published (1817) an Essay on the variation of the compass, corroborating Captain Flinders' statement, of the error in the variation produced by a change of the ship's head, which Mr. Bain experienced by observations on a cruize to East Greenland, in H. M. S. Sybille in 1814, and also in other places. He found the quantity of error diminish considerably East of the meridian of Greenwich, on approaching the North pole, where the variation also decreased; and increased with West longitude, where the variation increased: but he found the error by a change of the ship's head from East to West, in no part of those seas so great as in the English channel, where it amounted to 9° and 10°.* Mr. Bain, is however, of opinion, that the dip of the

* Mr. Bain has given two tables, one for the North Sea, and one for the English Channel, wherein the quantity

needle *has not so close an affinity* with its horizontal aberration, occasioned by the change of a ship's head, as Captain Flinders supposed; and that consequently, the *rule* invented by this scientific officer, for ascertaining the necessary correction *in all situations*, may probably not be founded on true principles.

It is however, certain, that in high latitudes where the variation of the compass in most parts is *generally* considerable, and the dip *always* great, the deviation or horizontal aberration of the needle resulting from the change of a ship's head, is also greatest, in proportion to the sine of the angle it makes with the magnetic meridian. But near the equator, where there is little dip, and the variation of the compass small in quantity, there appears to be little or no aberration of the needle produced by the change of a ship's head from East to West; at least, none could be discovered in the Strait of Malacca, by careful observations taken by me. Captain Flinders' rule might easily be verified, in any place where both the dip and latitude are great, in either hemisphere, but where the magnetic and true meridians *coincide*, which is on the line of no variation. For, if Azimuths observed, with a ship's head North or South, agree with others observed when her head is East or West, it will prove that the rule above described, is not correct: because, with the same dip, and in the same latitude, if the magnetic meridian *differ much* from the true meridian, or in other words, where the variation of the compass is *considerable*, azimuths or bearings taken with a ship's head North or South, will differ from others taken with her head at any angle from the meridian, in proportion to the sine of that angle, and relatively, to the attractive influence of the metal contained in every ship. But farther experience, and a greater number of accurate observations are wanting, to elucidate this important and interesting discovery in nautical science. It is however, very probable, and reasonable to suppose, that the aberration of the needle occasioned by the change of a ship's head, is not so much dependent on the quantity of the dip, as it is on the quantity of the variation, or angular difference between the magnetic and true meridians.

Observations by Mr. Wales on the errors of variation of the compass from various causes.

Mr. Wales, Astronomer, in the Resolution, observes, in the introduction to Captain Cook's third voyage, published in 1785, that he found a *variety of cases*, wherein differences were found in the variation of the compass.

1st. Putting the ship's head a *contrary way;* differences 3° to 6°, and even 10°.

2d. At different times of the same day; differences 3° to 7°.

3d. Being under sail, and at anchor in a road-stead; differences 5°.

4th. On board different ships; differences 3° to 5°.

5th. Near the same place, at different times in the voyage 4° and 5°, or upwards.

6th. In different compasses; 3° to 6°.

Captain Flinders' remarks on those observations.

Captain Flinders, on examination of these cases stated by Mr. Wales, found great reason to believe, that the direction of the ship's head had been changed in most of those where great differences had been observed; and also that the differences were conformable to what had been experienced on the binnacle of the Investigator.

The last-mentioned officer, farther observes, that in the southern hemisphere, the South end of the magnetic needle was attracted toward the nearest land, as well as by the iron in the ship; and he only experienced in two instances, the South end of the needle to be repelled from the land, which happened with observations taken on the shore, and might have been produced by some metalic rock situated near the theodolite on the East side, although the body of the land lay to the westward.

Captain Flinders gives the following precautionary remarks, relative to the use of the com-

of error occasioned by changing a ship's head, is shewn for each point of the compass, allowing 10° between the East and West point for the English Channel: but in these tables, the quantity of error is apportioned in an arithmetical ratio for every point; whereas, it should have been conformably to the sines of the angles from the meridian.

pass in marine surveying, founded on his experiments made in different ships, to discover the magnetic power of each locality.

Precautionary rules relative to surveying with the compass.

1st When the guns are on board and the ship ready for sea, nail small cleats on the binnacle for shewing the place where the azimuth and surveying compass is to stand, when in use. Ascertain by repeated observations whether it be at North or South, or in what other angle near them, that this compass gives exactly the same variation; and mark these as the *points of no difference.*

2d. Ascertain what the difference in variation is, when the head is placed at right angles to the points of no difference, on each side. Half this difference is the ***error for eight points;*** which being divided by the dip, will give the common multiplier for that hemisphere, and perhaps for both.

3d. Try the accuracy of the common multiplier as often as conveniently can be done, by observations taken at various parts where the dip of the needle is different; and more especially, to ascertain whether observations in the southern hemisphere give the same multiplier as in the North.

4th. No change ought to be made in the disposition of the iron work or guns during the voyage; but if a change be indispensible, ascertain as soon after as possible, what alteration it may have produced in the points of no difference, and in the multiplier.

5th. The direction of the ship's head, by compass, to be noted to the nearest quarter point when the variation is observed, or bearings of land are taken; this to be considered an indispensible part of such observations, since without it the true variation cannot be known, nor the proper allowance made to the bearings.

6th. On arriving upon the coast to be surveyed, miss no opportunity of observing the variation, by azimuth if possible; and on passing from one side of a projecting cape or island to the other side, remark if any difference arise in the compass. This is best done by azimuths; but it may be found roughly by the bearing of two well-defined heads or points set in a line from opposite directions. If after the proper corrections are made according to the ship's head, the bearing be not the same, the difference will be seen.

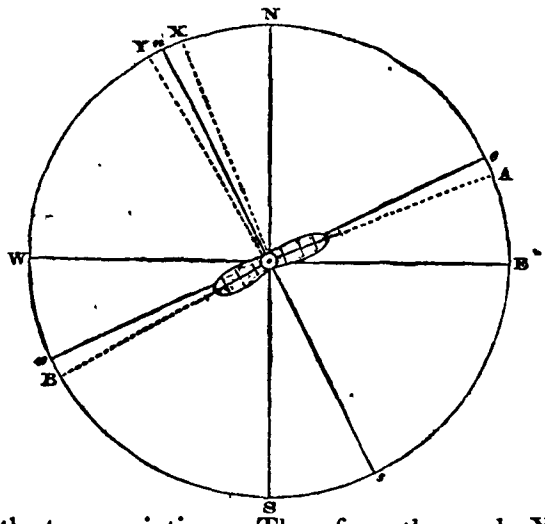
Lastly. These remarks, relate chiefly to a compass fixed on the binnacle; but the trouble of correction may be avoided, if a place can be found near the taffrel, where the attraction of the iron at the stern will counteract, by its proximity, the more powerful attraction in the centre and fore parts of the ship; and should the after attraction be too weak, it may be increased by fixing one or more upright stanchions or bars of iron in the stern.

If a *neutral* station can be found or made, exactly amidships, and of a convenient height for taking azimuths and bearings, let a stand be there set up for the compass: and if the stand must of necessity be moveable, make permanent marks, that the exact place and elevation may always be known. Observations taken here, should never undergo any change from altering the direction of the ship's head, at any dip of the needle; but it will be proper to verify occasionally, and to compare the azimuths and bearings with others taken on the binnacle. The course should also be marked from this compass, though the ship be steered by one before the wheel; a quarter or half a point being allowed to the right or left, according as the two may be found to differ.*

* Mr. Thomas Yeates, has with great labour and ingenuity, constructed a Variation Chart of the Navigable Globe, from lat. 60° North to 60° of South latitude, chiefly from actual observations made by European navigators and astronomers, as recorded in manuscript journals at the hydrographical offices of the Admiralty and East India House, compared with Spanish surveys in the Pacific Ocean, and collated with tables of the variation.

This chart is nearly ready for publication, which will be a valuable auxilliary to navigation in general, as well as interesting to those who investigate magnetical phenomena, the magnetic meridians or curves, being delineated at convenient distances on the chart, also the Halleyan lines, for every degree of change in the variation; and it is elucidated by much important information, with explanatory remarks, and a brief description of the discovery of the variation of the needle, and its aberrations since that time.

A DIAGRAM to illustrate the aberration of the needle resulting from the change of a ship's head from East to West.




Let A represent the ship's apparent course by compass, steering East in the English Channel, when the variation observed is 20° 30′ West, which lay down from A to E, and draw the line W E which will be the apparent East and West Rhumb.

Then N S drawn at right angles, will be the apparent meridian, from which set off X the observed variation 20° 30′ West.

Let B represent the ship's apparent course by compass, steering West after tacking, and the observed variation 29° 30′ West, equal to W B equal to N Y.

Bisect X Y, and prolong *n* to *s* which will be the magnetic meridian. Then the angle N O *n* equal to 25° or half the sum of the observed quantities with the ship's head East and West, is the true variation. Therefore, the angle X O *n* equal to 4° 30′ is the aberration of the needle East of the magnetic meridian, produced by attraction when the ship's head was on the line A or steering East. And the angle Y O *n* 4° 30′ is the aberration of the needle West of the magnetic meridian when the ship's head was on the opposite line B or steering West. Then the apparent courses of the ship, being corrected by the quantity of the angle of aberration 4° 30′, her rectified course will be on the line *e* the magnetic East, or on *w* the magnetic West respectively; *e w* being the corrected magnetic parallel or East and West Rhumb, drawn at right angles to the magnetic meridian *n s*.

Lieutenant Ross, of the Company's ship Discovery, observes in his journal on the 5th of January, 1813, as follows.

Remarks by Lieut. Ross on a dip of the needle by ascending heights.

At the foot or base, of some of the high islands on the South coast of China, I have observed the needle of the theodolite to be horizontal or nearly so, when the plate of the theodolite was levelled; but when it was carried up about 800 feet high, to the summit of those islands, and there carefully levelled, with the needle pointing to the same part of the theodolite, there was observed to be a very sensible dip of the South end of the needle; which was not only experienced by 1, but by 2 or 3 different instruments. Does this proceed from the attraction of some metallic substance on the South end of the needle, (it being always longer than the North end, and would more readily be depressed) or does the North end by being carried up so far, lose a portion of its magnetism, and therefore become lighter? If this effect is subject to a general law, proportionate to the elevation above the level of the sea, may not a *long needle* with its point traversing along a graduated verticle circle, be used to *measure heights*, after the exact dip at different elevations is known?

Remarks on the utility of chronometers, if properly applied to measure the longitude.

CHRONOMETERS, would be highly useful for the improvement of marine geography, were navigators to adopt an *uniform method*, in marking in their journals the longitude obtained by these excellent machines. In taking a departure for chronometers at sailing from any port or headland, the longitude *allowed* to that place should be marked distinctly in every ship's journal; and the longitude *measured* from it by chronometers (whether East or West) to every headland, island, or danger, during the passage, ought to be carefully stated; by which means, the *relative* meridians of those places will appear to view, and be ready to compare with the admeasurement of the same by other chronometers.* But unfortunately,

* To shew the utility of this, the following example may be given. In the Journals of two ships, which saw

the generality of navigators, seldom mention in their journals the longitude allowed to the place of departure, and instead of carrying on the longitude *made*, daily from that meridian by chronometers, they mark longitude *in*, by chronometers. The journals therefore, are of little or no use, for any *future* purpose, on account of the *indefinite* manner in which the longitude is marked by chronometers.

When the longitude obtained by lunar observations, is carried on daily by chronometers, or up to any headland, it ought also to be marked distinctly, in order to prevent any mistake.

Of lunar observations:

When lunar observations are taken, the objects on both sides of the moon ought always to be observed if possible, and the mean taken; which will contribute to correct or modify the errors of the instrument, particularly when the distances are *nearly equal*, and fall on the *same part* of the arch of the sextant: and the difference of longitude *run by log*, between day and night observations, ought never to be applied in carrying on the one to the other, if there is a *chronometer* on board. If for instance, some observations of the sun and moon are taken in the afternoon for longitude, altitudes of the sun should be taken nearly at the same time to obtain the error of the chronometer, or what it is fast or slow for the apparent time at ship; having also marked down the time by chronometer when the distances of the sun and moon are observed, the error of chronometer must be applied to it, to reduce it to the apparent time of observation. When the observations are taken afterward by the moon and stars in the night, the time by chronometer ought likewise to be marked down, to which apply its error, and the quantity of loss or gain of the chronometer (proportionate to its daily rate,) for the interlapsed time between these observations and those taken in the afternoon by sun and moon. The apparent time at ship when the observations of the moon and star were taken, will then be measured by chronometer to the meridian of the place where the observations of sun and moon were taken in the afternoon, and the mean of both should be taken for the longitude of that place, after comparing the apparent time of observations with the Greenwich apparent time. By using the chronometer in this manner, the errors liable to arise from currents, and from the admeasurement of ships run by log, *between* day and night observations, will be avoided.†

Chronometers useful in connecting them.

CONFORMABLY, to the design of this work, which is the safety of lives and property, a few cautionary remarks to mariners, may be introduced, which are the result of the writer's personal observation.

Coral shoals, when discernible.

CORAL SHOALS, particularly when they are white or variegated, will generally be visible from the mast-head when the sun is near the zenith, and shining bright. If the situation of the observer is between the sun and coral shoals, the latter may frequently be discerned although the sun's altitude is not very great; but the glare of the sun will hide them from the observer, when they are situated between him and the luminary.

Detached clouds, passing with a slow motion under the sun's disc, have their shadows often reflected upon the surface of the sea, resembling greatly the appearance of coral shoals.

the Brill Shoal, and Middle Island in the Straits of Salayer, at different times, I find they had lunar observations in both ships, which the Journals assert, may be depended upon in fixing the longitude of those places. It nevertheless, happens, that the observations differ 20 miles, for those taken in one ship, make the Brill Shoal and Middle Island, 20 miles more easterly than those of the other ship; but having chronometers on board of both ships, they *agree exactly* in measuring the difference of longitude between the Brill Shoal and Middle Island, although there is a *difference* of 20 miles in stating the longitudes of these places by the lunar observations.

† It is very perplexing to young navigators, that nautical time, or that used at sea, is 24 hours later than astronomical time; because the nautical almanac, and all the tables in general use, are computed for astronomical time. As the security of navigation depends upon astronomy, it certainly would be of utility to resign this *irregular prejudice*, and make nautical time conform to astronomical time.

But as a *general rule*, it may be observed, that coral shoals are best discerned when the sky is clear, with the sun shining at a great altitude; and particularly, if the situation of the observer be between them and the sun, with his eye considerably elevated above the surface of the sea.

Coral reefs abound chiefly within the tropics, particularly in the Indian and Pacific Oceans, and round New Holland; many of the islands are either surrounded by these reefs, or stand upon a coral base. The formation of coral reefs by zoophytes is very remarkable, as these are neither perfect animals nor vegetables, but partaking of both. Most of them take root and grow up into stems, multiplying life in their branches, and in the transformation of their animated blossoms or polypes, which are endowed with spontaneous motion. Plants, therefore, resemble zoophyta, but are destitute of animation and the power of locomotion; and zoophyta are, as it were, plants, but furnished with sensation and the organs of spontaneous motion. Of these, some are soft and naked, and others are covered with a hard shell; and it is astonishing with what rapidity they form coral reefs, by taking root often at the bottom of the sea in deep water, from whence the stems branch upward, and gradually, but speedily become transformed into solid rock. As these concretions of coral grow up near the surface of the sea, they become dangerous to ships; and after they appear above it, they are gradually transmuted into islands of various dimensions, according to the extent of their original basis.

A caution relative to sleeping on shore, in places considered unhealthy.

SHIPS, which stop on the East coast of Madagascar, at Cape Negrais, Tavay, Nicobars, Poolo Bay, Batavia, Borneo, or at any place within the tropics where the country is low, woody, uncultivated, and considered unhealthy, ought not to allow any of their people to remain on shore during the night, when wooding and watering at such places: nor should they be sent on shore in the mornings, until the noxious vapours are dispersed, by the influence of the sun penetrating into the forests.

Remarks relative to swimming,

PERSONS who have not learned to swim, when they fall into the sea by accident, often drown themselves by lifting their hands *above* the surface, with a rapid and irregular motion. With proper resolution this may be avoided, for a *gentle* and *slow* motion of the hands *under* the surface of the water, either *obliquely*, or *perpendicularly* like the feet of a dog when swimming, will be sufficient to keep the face of any person above the surface, if there is no broken water. This will be more obvious, when it is generally known that the specific gravity of the human body is *commonly* lighter than sea water, as many persons float on the surface of the sea without any motion.

and of floating on the surface of the sea without motion.

The natural position for persons to float, is with their backs downwards, and their arms extended close under the surface, which act as levers to preserve them in the natural position. If a person floating with his back downward, place his arms close to his side or across his breast, he will soon be changed from the horizontal position, for his feet will descend perpendicularly, and then his mouth and nose will gradually be immerged under the surface. If in floating, his arms are extended perpendicularly from his body, he will generally remain in the natural position a considerable time before his feet begin to descend from the horizontal to the vertical position. If his arms are extended beyond his head, with the palms of his hands spread just under the surface of the water, he will float steady in the horizontal position, with his face above water, and his toes touching the surface. In this manner the author has frequently floated in warm climates, half an hour at a time without the least motion, and generally was inclined to sleep: by placing the arms a little forward or backward, the natural floating position is always adjusted to the greatest degree of regularity. It ought however to be observed, that the specific gravity of some persons is rather

heavier than sea water, and such persons cannot float with their faces continued above the surface for any considerable time, without employing a little motion with their feet.

Remarks on placing the heavy articles in ships, to prevent them from labouring in stormy weather;

WHEN SHIPS, are chiefly laden with *dead weight*, such as iron, lead, zinc, &c., they labour and roll greatly; to modify which, part of the dead weight is generally placed high, in the hold, or between the decks. This, however, has little effect in retarding the quick rolling motion, which frequently endangers the masts when there is much swell; for the dead weight being placed over the whole breadth of ships, acts as a pendulum on the sides, to augment the rolling motion, produced by the swell. Returning from China in the Anna, by the eastern passage, laden deeply with sugar and tuthenag, we had a gale of wind near the Pellew Islands, in which the ship rolled very quick, broke some of the rigging, and the foretopmast. In order to prevent this quick and dangerous rolling, tuthenag was taken from the hold, and placed in great quantities upon the decks, until the ship had scarcely stability left to carry proper sail; notwithstanding, there was very little diminution of her rolling.

Were it possible to compress all the dead weight contained in a ship, into a ball, and then place it at the centre of motion, she would in such case roll very little, because there would be no heavy weight near her extreme breadth. But as this cannot be done, an approximation seems desirable, which may be effected by stowing all the light goods along the sides and at the extremities, and the heavy articles in a longitudinal section over, and on each side of the keel, from the fore to the after hatchway, as circumstances require; and the dead weight may be carried up to the deck in this manner, or to any height thought consistent with the stability of the ship. This method was adopted in loading the Anna, when a great proportion of her cargo was iron, and she was very easy during the passage from London to Bombay; for the light goods being placed at the *extremities*, and in *two sections* along the *sides* of the ship, the cause of her pitching and rolling, was thereby greatly limited.

Remarks on the common terms applied to winds, waves, and currents;

EXPLANATORY REMARKS, are here rendered necessary, on account of the *ambiguous* terms applied in *common language* to the direction of the winds, waves, and currents.

The point from which the wind *proceeds* usually gives to it a name; when the wind blows *from* the North, it is called a North wind, and vice versa. This order, however, seems to have been sometimes reversed by navigators; in the early voyages of the Portuguese to India, the wind that blows *from* N. E. is in some journals, called the S. W. monsoon; and that which blows *from* S. W. is called the N. E. monsoon; thereby, taking the name of the place to which the wind is *proceeding*.

The terms used by navigators to signify the direction of the waves, are also very vague and undefined; for although, (like the wind) the waves generally receive the name of the direction from which they *proceed*, the waves or swell running from North to South being called a northerly swell, and in like manner for those running in any other direction; this, however, is not always the case, as the waves or swell running from North to South, is called in some journals a southerly swell.

The terms applied to the direction of currents, are generally the reverse of those used to denote the direction of the wind and waves; as the direction to which the current is *going*, commonly gives it a name. Notwithstanding, a current running from North to South is almost uniformly called a southerly current, and that running from East to West called a westerly current, yet it appears that *some* navigators are liable to reverse this order; for one of our circumnavigators in his voyage to the South Sea, calls a current running from East to West, an easterly current, and vice versa.

From the indefinite manner, therefore, in use amongst navigators, to *mark* the direction of the winds, waves, and currents, it seems necessary to describe the method followed, in applying the *terms* throughout this work.

How named in this work.

*The direction* of the wind, is named from the point of the *compass* from which it blows.

*The direction* of the waves, swell, or sea, is named from the point of the *compass* from whence they proceed.

*The direction* of the current, is named from the *true* point or place to which it is running, if not otherwise expressed.

*The course* steered by a ship at any time, near land, or in the open sea, is by *compass*, or magnetic.

*The bearings* of land, taken from a ship at sea, or at anchor, are by *compass* if not otherwise expressed.

*The direction* of any coast, or bearing of any headland, island, or danger, &c. from any other place, when mentioned in this Directory, is the *true* bearing by the pole of the *world*, if not otherwise expressed.

Explanatory Remarks.

THE GEOGRAPHICAL SITUATIONS, of the *principal* places are stated, and the *names* of the Ports, Headlands, Islands, and Dangers, with which the paragraphs *generally* commence, throughout this work, have been set forth in *capitals*, in order to render them more conspicuous, and that navigators may not be liable to lose time, in searching for any place of which the description is required; because, it frequently happens in critical situations at sea, that a small loss of time, may occasion considerable danger. To facilitate the same object, *side notes* have been added, which will be found contiguous to, or fronting the principal matter contained in each paragraph. And to accomplish this object in the highest degree, a copious *general index*, is placed at the end of each volume, comprehending the names of all the Ports, Headlands, Islands, and Dangers; likewise of the principal Banks, Bays, Rivers, Mountains, Towns; or whatever is conspicuous, as marks, for the guidance of navigators.

Conclusion.

ALTHOUGH during the long and laborious prosecution of this work, the author has been constantly on his guard to prevent errors, and render it as complete as such an immense mass of heterogeneous materials would admit of; yet, he is sensible, that with all possible care, it may still be liable to imperfections, which will readily be excused by those who can appreciate the difficulty of bringing forward a work of this nature and magnitude, digested not merely from his own observations, but also from documents, various in kind, often discordant in themselves, and seldom harmonizing with each other.

Since the publication of the former edition, however, he has received many highly important communications of *newly* discovered dangers, and navigable channels among the eastern islands not before known; these, with a careful examination of the journals belonging to the Company's ships during the 17th century, as well as those of a later date, have afforded him ample means for the *improvement* of this *new edition* of the India Sailing Directory.

Finally, the author having devoted the last two years to a careful revision and correction of his work, he trusts that its approximation towards perfection, has not been inconsiderable; and that all the discoveries which remain to be made during the present generation, cannot be of a nature to render it susceptible of being much improved for a long period of time, and he has great reason to infer, from his own observations, as well as from the information of others, that no *similar work* of equal magnitude and accuracy, was ever before published in this, or in any other country.

# DIRECTIONS

FOR SAILING FROM

# ENGLAND TOWARDS INDIA.

## FIRST,

## TOWARDS MADEIRA; PLACES OF SHELTER NEAR THIS ROUTE.

THE LIZARD POINT, being from the best authorities in latitude 49° 57½′ N. longitude 5° 13′ W. and CAPE FINISTERRE the westernmost promontory of Spain in latitude 42° 54′ N. longitude 9° 18′ W., when clear of the Channel, if the wind continues fair, steer a course to pass well to the westward of Cape Finisterre, at 20, 40, or 50 leagues distance. Should the winds, however, be fixed at W. and W.S.W., as soon as a ship can round the Cape, she ought to stand to the southward, and not lose time by endeavouring to pass it at a great distance; for the wind will probably become more favorable as she proceeds southward, and in winter it is a great advantage to get out of the cold weather as soon as possible.

Geographical Site of the Lizard Point and Cape Finisterre.

On passing this Cape.

In the Bay of Biscay, and to the westward of Ushant, the current sets to the westward at times in winter; but in summer, it generally sets N. E. and easterly. It is often found to set eastward from March to November, particularly when westerly winds prevail; and off Cape Finisterre, and near the South part of the Bay, it sets mostly along the Coast to the Eastward; and along the East side of the Bay it sets to the Northward, parallel to the West Coast of France. Caution is therefore requisite with a westerly wind, in standing to the southward to weather Cape Finisterre; for should a ship's position not be ascertained by chronometers or lunar observations, it would be imprudent in gloomy blowing weather to stand to the southward in the night, if not certain of being well to the westward of the Cape.*

Currents near the Channel & Bay of Biscay.

* A deplorable example of this, was experienced by his Majesty's ship Apollo, with 69 ships under convoy for the West Indies, which sailed from the Cove of Cork, March 26, 1804. With a fair wind blowing strong, they steered about W. S. W. till the 31st, the wind then came more to the westward. At noon, April 1, the observed, lat. 40° 51′ N. lon. 12° 29′ W. *by account.* At 8 P. M. the wind shifted to S. W. and increased to a gale with a heavy sea; they stood S. S. eastward, and at half-past three on the following morning, struck on the coast of Portugal, in latitude about 40° 22′ N. 3 leagues northward from Cape Mondego. They did not think themselves near the coast, judging, most probably, that the dead reckoning could not be much out, in 6 days. Captain Dixon, of the Apollo, and 60 men perished, in making exertions to reach the shore; the other part of the crew, were two days clinging to a fixed fragment of the wreck, without nourishment. About 40 sail of the convoy were also wrecked on this rocky shore at the same time; some of these sunk with all their crews, and almost every ship lost from 2 to 12 men. How much it is to be lamented that all ships of war have not chronometers on board, particularly those in charge of fleets. A few sights obtained, for even an *indifferent* chronometer, on the day preceding this fatal catastrophe, when the sun was visible, would have prevented this deplorable loss of lives, and immense property! Indeed, no ship should be without 2 chronometers, excepting small coasting vessels.

N. W. gales have driven E. I. ships far into the Bay of Biscay.

Sometimes gales of wind from W. N. W. blow into the Bay of Biscay, continuing for several days, and some of the outward-bound East-India ships, have been driven far into the Bay during these gales, in April and May. Should a ship have the misfortune to lose any of her masts during one of these gales, the heavy sea rolling in from N. W. and W. N. W. with an easterly current, would unavoidably force her to leeward, and should the gale continue long and severe, she might be in danger of drifting on a lee-shore. It may therefore be expedient, to give a short description of places, where a ship would be sheltered in a gale at N. W. or W. N. W. in the Bay of Biscay, if obliged to steer for the land.

Harbours in the Bay.

BAYONNE AND BILBOA, at the south part of the bay, are confined harbours, and have not sufficient water for large ships over the bars at their entrance. Off the eastern point of Bilboa entrance, there is said to be a reef of rocks, having anchorage 7 or 8 fathoms within it, between the point and pier on the eastern side, where vessels lie sheltered from a N. W. wind. The entrance of Bilboa, is in latitude about 43° 24′ N. longitude 2° 54′ W.

Geographical Site of Bilboa.

Belle Isle.

BELLE ISLE, in latitude 47° 18′ N. longitude 3° 5′ W.; and Basque Road, near Rochefort, are the best places in the bay, which afford shelter for large ships in westerly gales. Belle Isle is high, and may be seen at a great distance; the north-west end of it is surrounded with rocks, and directly in the line from it to Isle Grouais, nearly mid-way between them, is the Bank Bervidaux. The north-end of Belle Isle is in latitude about 47° 23′ N. and the south-end in 47° 15′ N. If a ship with the wind at N. W. or W. N. W. keep between these latitudes in running for the island, when she approaches it, she should steer along the south-side at 2 miles distance, to Point du Canon, the S. E. extremity; when abreast of this point, she ought to haul up for Point Locmaria, which is the easternmost point of the island, distant about a league from the former, then anchor under it in 8, 10, or 15 fathoms, where she will be sheltered from N. W. and westerly winds. Should it veer to S. W. she may run to the northward of the point, and anchor on the north-east side of the island.

Shelter may be found under it.

ISLE HEDIC about 7 miles eastward from the east point of Belle Isle, has many rocks around it. To the S. E. is a cluster of rocks called the Cardinals; the largest is distant from Hedic about 1 mile, and is always above water. Should a ship be driven to the eastward of Belle Isle, she may pass to the southward of the Cardinals at a mile distant, then haul up to the northward, and anchor on the east-side of *them* and Isle Hedic, in 9 or 10 fathoms sand and mud.

Geographic. site of Isle Re, &c.

Ships bound to Rochelle, or Rochefort, steer for ISLE RE in latitude 46° 14′ N. longitude about 1° 30′ W. which has a lighthouse on its N. W. end. In running for this island, care is requisite to avoid two reefs of rocks, partly *above* and partly *under* water, called Banches Vertes and Roche Bonne: they are nearly 2 leagues in extent east and west, distant about 12 leagues west from Isle Re, in latitude about 46° 15′ N.* From the west point of Isle Re, a rocky bank extends under water about a league, called the Whales of Ars, or Les Balines d'Ars; and from the S. W. part of the Island, a ridge of rocks extends a full league to seaward, called Champ Chardon; but the Lavardin Shoal is most in the way, which is a small rocky bank dry at low water spring tides, about 1½ mile S. Eastward from the S. E. end of Isle Re. Isle Oleron lies to the South of Isle Re, and betwsen them is the channel called Pertuis d'Antioche, leading to Basque Road, which is about 2 leagues wide. It is safest to keep nearer Isle Re than Oleron, on account of some rocky banks which lie off the north end of the latter, distant near a league, called the Antioches. And nearly at the same distance from the shore, along the north and N. E. side of Isle Oleron, a chain of banks extends nearly from the Antioche to abreast of the south end of Isle Aix. In running for Basque

Lavardin Shoal.

* Near them to the westward there is 60 fathoms water, and 30 fathoms to the eastward of them.

Road, keep nearer Isle Re than Oleron, till near the S. E. end of the former; you must then steer to the southward, to avoid the Lavardin Shoal already mentioned, lying 1½ or 2 miles off the S. E. end of Isle Re; then steer for the west part of Isle Aix, a flat island, with some houses on it, situated about half-way between Oleron and the main land, keeping nearer Isle Oleron than the main.

BASQUE ROAD, extends from the Lavardin Shoal to Isle Aix, having from 10 fathoms water close to this shoal, to 12 and 13 fathoms in the middle of the road; and from 5 to 9 fathoms about 1½ mile to the north and N. W. of Isle Aix. The soundings in mid-channel, between Oleron to the *southward* and Isle Re and the Lavardin Shoal to the *northward*, are generally from 12 to 15 fathoms, shoaling on each side toward the banks. On the northern extremity of Oleron, there is a tower called Chassiron, where two fires are kept in the night, one above the other, by which it may be readily known. Should there be much sea in Basque Road, a ship may run up along the west side of Isle Aix, taking care to keep nearer *it* than to Oleron, to avoid the bank off the latter; and then anchor in 5 or 6 fathoms, off the S. W. end of Isle Aix, in the inner road. Basque Road.

THE COASTS OF PORTUGAL, OR SPAIN, having been sometimes visited by India ships, when forced by stormy weather to take shelter in some of the nearest ports, in order to repair damage sustained, it may therefore be useful to describe briefly, some of the principal headlands and best harbours on the western side of the Peninsula. Coasts of Portugal & Spain.

CAPE ORTEGAL, the northernmost headland of Spain, is in lat. 43° 48′ N. lon. 70° 40′ W. and about 12 leagues to the S. westward of it, is Cape Prior, in lat. 43° 36′ N. having a very ragged aspect, with some rocks near it, which require a birth in passing. This Cape is above 2 leagues to the N. W. of the entrance into Ferrol, and between 4 and 5 leagues from the Iron tower, or light-house of the Groin, or Corunna. Geographical Site of Capes Ortegal and Prior.

When a vessel comes near the bay of Ferrol, the haven begins to open, and you sail in midchannel between two headlands, but when within, steer to the northward and anchor by the north point, for it is rocky and flat on the west side of the town, and therefore must be avoided. To sail into Ferrol,

To enter Ferrol from south or westward, after giving a birth to the north point of Ferrol, which is foul and rocky until the haven opens, then run right in, and you will be within the south point, clear of its projecting foul ground; steer then for the north point of the haven, and along by it till the haven opens itself again; from thence keep in mid-channel, where are 12, 14, and 15 fathoms water, though the passage is so narrow that a stone may be thrown across it.

CORUNNA, is situated at the bottom of a deep bay, within the mouth of a spacious haven, south-west of Ferrol, and on the opposite side of the gulf. To enter this port, having made the Islands Sizarga, which being foul, must have a good birth, steer for the light-house or iron tower, and run in E. S. E., and round the point S. E. and S. S. E. giving it a birth of 4 or 5 cable's-lengths. In passing the point, a small Isle will be seen with a house on it, along which a ship may sail very close, and anchor off the Fishing Village in 6, 7, or 8 fathoms. and Corunna.

VIGO in lat. 42° 13½′ N. lon. 8° 27½′ W. is situated on the S. E. side of an excellent bay or haven, which is fronted by the Bayonne Isles, extending from lat. 42° 11′ N. to 42° 15′ N., and on the East side of these Isles, there is safe anchorage and shelter from the sea and westerly winds, in 10 and 12 fathoms. The best channel into Vigo bay, is to the South of these Isles; for the northernmost Isle has a sunken rock about a cable's- Geographical Site of Vigo, and Bayonne Isles.

length off, which must have a good birth when a ship enters by the northern channel. When the bay is entered, a ship may run up in mid-channel, and anchor in 10 or 12 fathoms off Vigo; or farther in, about Point Rondal, she may be laid in the mud and receive no injury, if destitute of anchors.

Onza Isles, & Pontevedro Bay.

ONZA ISLES, lie to the northward of Bayonne Isles, and on the East side have safe anchorage from westerly winds with fresh water, where our ships of war procured supplies, even while at war with Spain. The south extremity of these Isles is in lat. 42° 21′ N., and they front Pontevedro Bay, which like that of Vigo, is a good haven.

Salvora Isle, & Arosa Bay.

SALVORA ISLE, in lat. 42° 28′ N. fronts the bay or gulf of Arosa, which is a deep and excellent haven, extending from the Isle about *true* N. N. E. a great way inland, having good shelter and moderate depths, with several shoals. The channel into this bay is on the south and east side of Salvora Isle, where a ship is sheltered as soon as she gets inside the Isle; but there is no safe passage on the north-west side of this Isle, it being nearly joined to the main by shoals.

Geographical Site of Cape Mondego,

CAPE MONDEGO, in lat. 40° 11′ N. lon. 8° 53′ E. is a projecting headland on the coast of Portugal, with a reef stretching out about a cable's-length, having good anchorage and shelter on the south side from north and N. N. W. winds.

and Cape Carvoeiro.

CAPE CARVOEIRO, in lat. 39° 22′ N. lon. 9° 20′ W. is a rocky headland with a light-house like a church on its extremity, and being separated by a low sandy isthmus from the inland country, makes it look like an island in thick weather, by which some ships, mistaking it for the Burling, have run on shore on the sandy isthmus.

Burlings, & Estellas.

BURLING ISLAND, is of middling height and size, bearing from Cape Carvoeiro N. 55° W. (true) distant 6 miles nearly; W. N. W. of the Burling ½ a mile distant, lie six islets called Estellas in a N. E. and S. W. line, with a rock about ¼ mile to the southward of the southernmost one, visible at low water; there is also a high rock at a small distance N. E. of the Burling.

From Burling Island N. 23° W. true bearing, distant 4 ¾ miles, lies a large round steep islet, surrounded by other rocks. There is a safe channel between this northern group and the Estellas about 3 miles wide, but as the current sets toward the latter, it should not be used without a commanding breeze.

The channel between Cape Carvoeiro and Burling Island, is 5½ miles wide with soundings, and may be navigated without fear of danger; and a ship may anchor occasionally under the Burlings.

Cape Roca.

CAPE ROCA, in lat. 38° 46′ N. lon. 9° 30′ W. is formed of steep cliffs, with a rocky islet adjoining to it, termed by seamen the rock of Lisbon, from which a reef projects about a muket shot, having 25 fathoms close to. Cape Razo, is a low rocky point distant 4 miles S. 7° E. true bearing from Cape Roca, having on it Fort Sanxete, and adjoining it there is a small shoal. From Cape Razo the south point of Cascaes bears S. 62° E. (true) which is a steep cliff crowned with Fort St. George and the Light-house of Our Lady of Guia; round this point the coast bends in to the N. E. forming the bay of Cascaes and the town of this name, where pilots are got for entering the Tagus.

Marks for entering the Tagus,

FORT ST. JULIAN, stands on a steep point, distant 4¾ miles S. 72° E. true bearing from Fort St. Martha near Cascaes, having a tower 120 feet high in the centre of the Fort, which serves for a light-house. From St. Julian to the tower of Belem the distance is 5 miles

N. 79° E. (true) and the coast between them forms a bay with numerous edifices, part of which, situated about the middle of the bay, serve as marks for the great bar or principal entrance.

THE GREAT BAR, is formed between two banks called the North and South Cachops; the North Cachop extends about 2¾ miles to the S. Westward of Fort St. Julian, and the sea breaks on it with a westerly wind. The channel between this Cachop and the north shore, is called the Corridor or Little Bar, has 8 to 10 fathoms water, but being narrow, can only be used with a fair wind.

THE SOUTH CACHOP, is a sand-bank having the Tower of Bugio on it, formed of two circular concentric bodies, from the middle of which rises the little tower 63 feet high, and bearing from St. Julian S. 55° E. (true) distant 1½ mile. The tower is insolated by the sand-bank being covered every tide, and this bank extends 2 miles to the S. W. leaving the bar or great channel to the north. This channel is no where less than 1 mile wide, with from 10 to 18 fathoms good bottom; a bank stretches across the channel between the Cachops, having not less than 8 or 9 fathoms on it, and increasing to 15 and 20 fathoms inside. The water shoals suddenly to both the Cachops, having 6 or 7 fathoms close to.

and Sailing Directions.

To enter the Great Bar with a fair wind, the leading marks should be brought on, before the meridian of Cascaes is passed; or bring Cape Roca light-house on with that of Guia, which will be sufficiently to the westward of the Cachops till the Paps* be discerned; these must be brought in one with Jacob's Ladder,† and so kept until the Tower of St. Julian bear west or S. W. then the north shore of the river may be navigated to the anchorage off Belem.

To enter the Tagus without a Pilot.

If when near the bar, a strong westerly wind prevent pilots from getting on board, nor the marks be clearly discerned, pass not the meridian of Cascaes till Belem Tower be brought on with the north end of the outer wall of Bugio, bearing true N. 65° E., or the latter E. ¼ N.‡ by compass, if Belem Tower is not visible. Steer on this bearing till the Tower of St. Julian bear true N. N. E.; being then in mid-channel, steer for the Turret of Caxias, which bears true N. 45° E., keep this course till abreast of Paço d'Arcos, then coast the northern shore to Belem.

Should the Mirante or Turret of Caxias not be seen, then so soon as the Tower of St. Julian bears true N. N. E. you will be 2¼ miles from Bugio, for which steer no longer, but steer midway between St. Julian and Bugio, or so as to make good a true N. E. course until past the bar.

The north shore of the river is safest to approach, the anchorage being better, the depths less, and the tides not so strong as near the south shore. During the freshes, the ebb tide runs frequently 6 miles an hour in the channel, requiring a press of sail to stem it, and at such times, when westerly winds blow strong, the sea breaks all across the bar between the Cachops, and cannot be easily distinguished from the breakers on the Cachops.

Geographical Site of Lisbon.

It is high water on the bar at 2½ hours on full and change of moon. The observatory of Lisbon is in lat. 38° 42′ 40″ N. lon. 9° 8′ 30″ W.

Pass to the westward of Madeira in winter.

AFTER LEAVING THE ENGLISH CHANNEL, steer to pass to the westward of Madeira, at any convenient distance exceeding 7 or 8 leagues. In the winter months, it is

* Two little mounts visible at a great distance, rising over the contiguous land.

† Seven walls or causeways, built to support the soil on the S. E. declivity of a round Hill of yellow colour near the sea, 260 feet high.—On the top of this Hill is a turret called Caxias 3 miles N. 60° E. from St. Julian, formed of two octagonal structures conjoined, each 33 feet high, and terminated in a cupola of similar shape. A good mark for Jacob's Ladder, is a long wall near it to the E. N. E. the buttresses of which, on the side of the Tagus, appear like the arches of a bridge.

‡ The variation at present, 1814, being 22¾° Westerly, at Lisbon.

preferable to pass to the west of Madeira, for strong gales from westward prevail in November, December, and January, producing eddy winds, and severe squalls near the land; which are occasioned by the high land obstructing the regular course of these gales. In November 1797, and December 1799, I was each time, forced to put to sea from Funchal Road. Severe westerly and S. W. gales, with hard squalls and rain, kept us at sea eight days each time, and prevented us from anchoring afterward, the W. S. W. wind continuing to blow strong. In these gales, the island of Madeira and the Desertas, were frequently obscured in fog; and the squalls so sudden and violent near the latter, and about the south-east end of the former, as nearly to overset one of the ships in company.*

Westerly gales.

Geo. Site and description of Porto Santo.

PORTO SANTO, in lat. 33° 5′ N. lon. 16° 16′ W., is a high island with several peaked hills on it, about 12 or 14 leagues north eastward from the east end of Madeira, and generally seen by ships bound to the latter: it has a bay on the S. W. side, where there is anchorage, water and refreshments; and this road has a rock at its west end like that of Funchal. Although Porto Santo is not so high as Madeira, it may be seen 12 or 14 leagues from a ship's deck; and is easily distinguished from Madeira or the Desertas, by its Peaks and uneven appearance; these islands having a more regular outline.

The Reef said to lie 3 leagues to the N. E. of Porto Santo, on which a Dutch ship was lost, has been found by H. M. S. Falcon to bear about N. 18° W. true bearing, from the body of the island, distant from the nearest part about 7 miles.

The Falcon, Lieutenant J. Bowen, examined this reef, or rocky bank, on the 10th of January, 1802. When the easternmost rock, off the N. E. point of Porto Santo bore by compass S. E. the N. E. point of Porto Santo S. S. E ½ E, northernmost rock S ½ W., and the west point of Porto Santo S. S. W. ¾ W. had 22, 23, and 25 fathoms rocky bottom; the master in the cutter, at the same time, about ¾ of a mile S. ½ W. from the ship, had 30 fathoms rocky bottom; from whence rowing to the westward the depth gradually decreased to 16 fathoms, and then more suddenly to 12, 8, and 4½ fathoms on the shoalest part of the rock, which was plainly discerned from the boat. When she was on it in 4½ fathoms, the N. E. point of Porto Santo bore by compass S. S. E., the northernmost islet or rock S. by W., and the west point of the island S. S. W. distant from the nearest part of it about 7 miles.

This rocky bank extends east and west about 1 mile, terminating in a point of rocks to the westward, on which the least water appeared to be 4½ fathoms. Lieutenant Bowen, remarks, that when the bearings were taken upon it in the boat, the compass was agitated by her motion, and therefore may not be perfectly correct, but he is certain that the boat was on the shoalest part, otherwise the sea must have broke on it, had there been less water, by the considerable swell and fresh breeze which prevailed at the time. Coming on to blow, he was prevented from making farther observations.

Channel between it and Desertas.

With the wind from the northward or N. E., bound to Funchal, the channel between Madeira and the Desertas is the most convenient, and seems about 4 leagues wide from the east point of Madeira to the Flat or Table Deserta, which bounds it to the eastward.

Desertas, or Desert Isles.

DESERTAS, are high barren rocks, except the north westernmost, which is level and

* November 28, 1797, blowing hard at S. W. off the S. W. end of Madeira, and a high sea rising, we bore away in the Carron, to endeavour to find shelter under the lee of the island. In running between Madeira and the Desertas, blowing very hard at S. W. with dark weather and rain, we were suddenly becalmed; then followed a eddy wind from N. E., the sea so high as frequently to cover the bowsprit and jib-boom. At this time we were much nearer to Madeira than to the Desertas, with a dark cloud extending over us. At the same time, two ships about 2 or 3 miles more eastward, were in clear sunshine, running before a severe squall at S. W.; and one of them had her main topsail blown away. In December 1799, by carrying a press of sail on the Anna, we just cleared the southernmost Deserta, in very thick weather, during one of these westerly storms, which drove us 2° eastward from Funchal. Several outward bound West-India ships, were lately dashed in pieces, by running on the Desertas in the night; the effect of an error in their dead reckoning.

much lower than the others: The middle Deserta is the largest, between which and the southernmost, called Bogia, there is a narrow channel, never to be attempted unless from necessity, as a ship is liable to be becalmed in it by the northern Deserta, which over-laps the Bogia. The fleet under convoy of H. M. S. Lavinia, bound to India, and to touch at Funchal, passed through the channel between the Middle and South Desertas, in May 1809. They mistook the Desertas for Madeira, and after steering for the south extreme of the Large or Middle Deserta, proceeded through the channel between it and the southern Island, which is 1 or 1½ mile wide at most, and seems perfectly clear of danger. None of the ships tried for soundings, but the fishermen say, that bottom may be got with 60 to 300 fathoms of line, according to the distance from either shore.

The Desertas stretch nearly N. N. W. and S. S. E., rather of an even appearance, and are about 5 leagues in extent. At the N. W. end of the great Deserta, is situated the low small N. W. Deserta, which bounds the channel between these islands and the east point of Madeira. This small level island is seen at 5 or 6 leagues distance, just appearing above the water, and close to it there is a pyramidal rock, which may sometimes be mistaken for a ship under sail.

MADEIRA, is very high, and generally clouded, except in serene weather; the east point, which is in latitude about 32° 42′ N. projects out in a kind of peninsula, rather low and rugged, forming an indentation or bay to the southward. In this bay, there are soundings laid down in some charts, but they must be very near the shore. In summer, when the N. E. winds prevail, a S. W. current sets through the channel between Madeira and the Desertas: and in that season, when the weather is settled, off Funchal Valley there are regular land and sea breezes; the sea breeze setting in from S. Westward in the forenoon, and the land breeze comes from the shore generally about 10 o'clock at night, but sometimes not till 2 or 3 o'clock in the morning. These land breezes do not extend above 3 or 4 miles off shore. It has been said, that southerly winds never blow hard quite to the shore at Funchal, that the south-westers or south-easters are never expected, except in January, February, and the beginning of March, and that large ships almost always ride them out; whereas, it is certain, these southerly gales blow quite home to Funchal, sometimes in November and December; and when they are apprehended, it is common for ships of every description to put to sea. These S. W. or S. E. gales, are in general preceded by a swell tumbling into the road, often accompanied by gloomy weather, drizzling rain, and a very unsettled breeze from the land, veering several points backward and forward very suddenly. By such indications ships generally proceed to sea; for should it blow from southward, it would be almost impossible to clear the shore on either tack after cutting or slipping, the anchorage being near the land. Some ships have rode out these southerly gales, but others have been driven on shore.*

Madeira described.

Southerly gales.

Indication of them.

In passing through the channel between Madeira and the Desertas, a ship ought to keep at a considerable distance from both; for it would be unpleasant to be drifted near either in calm weather, on account of the want of anchorage. In November, 1797, the Anna drifted in a calm very near the shore to the northward of the Brazen Head, and brought up with the stream anchor in 60 fathoms water, her stern not far from the rocky cliffs. After being at anchor some time, a light breeze from the land, with the help of the boats towing, enabled her to get out from this precarious situation. When a ship has advanced through the channel, and approaching the Brazen Head, she should not keep near it, in case of being becalmed, as there is no anchorage close to this steep bluff point, which is the eastern extreme of Funchal Road.

Directions for sailing to Funchal Road.

Near this bluff head land, ships are frequently baffled by eddy winds and calms, and ob-

* A few years ago, several ships at anchor in Funchal Road, were driven on shore, and wrecked by one of these gales. This, I think, happened in April or May. The S. W. gales are more frequent at Funchal than any other strong winds.

liged to get their boats out to tow; it is therefore advisable not to borrow too close to it in passing, nor to haul in for the road till nearly abreast the town. Should a ship enter the road by night, it is proper to shew a light at her ensign staff, to prevent being fired at from the forts. In working in with a land breeze, it is best to make short tacks opposite the valley, for here, both the land and sea breezes prevail. The Loo Rock situated near the shore, at the west end of the town, is a high rock with a fort on it; and the citadel is a brown square fort on a hill, over the W. N. W. part of the town. The best birth for large ships is, the citadel a little open to the eastward of the Loo Rock, in 30 or 35 fathoms water; the distance from the Loo Rock will then not exceed a large half mile.

Best anchorage.

With the Loo Rock and citadel in one, bearing about N. N. E. $\frac{1}{4}$ E., Funchal steeple N. E. $\frac{1}{4}$ N. by compass, the anchorage appears equally good, in 35 faths. stiff ground. With the Loo and Citadel in one, the ground is also good in 45 fathoms, off the former about 1 mile. Farther to the westward the ground is not so good, and to the eastward the bank has a sudden declivity from 50 or 55 fathoms good ground, to 100 fathoms rock, and then no ground. If south-westers are expected, which are frequent in winter, to anchor with the Loo and Citadel in one, or the latter just open to the westward of the Loo, is the most convenient birth to put to sea from, or to ride out a S. W. gale. But the citadel well open to the eastward of the Loo, is the best anchorage when south-easters are expected. In coming into Funchal Road with a brisk wind, sail should be reduced in time, to prevent having too much way through the water, at the time of anchoring; and a ship should be brought up with her head to seaward, that in case any accident prevent her bringing up, sail can be made off shore, or otherwise as most expedient. It is best to ride with a whole cable, when there is the least appearance of unsettled weather, with a slip buoy on the cable, in case of being obliged to cut near the end or splice, and put to sea quickly; as there would not be time to weigh the anchor, from the sudden approach of blowing weather.

A caution.

In light breezes and calms, it is proper to have a kedge anchor out to steady the ship, and prevent fouling the bower.

The beach is composed of shingle, and has generally a surf on it, which prevents a ship's boat from landing abreast the town; but on the N. W. side of the Loo Rock, about half a mile from the town, is the only place safe to land from a ship's boat; the country boats are employed in watering, &c. The current along the south side of Madeira and the Desertas, mostly sets to leeward in strong gales; but at the conclusion of a gale it sometimes changes suddenly, and sets contrary to the wind. The tides rise, and fall, about 7 feet in general, at full and change. The rainy season is said to be January, February, and March; October is also, frequently a wet month. And when hard westerly gales blow in November, or more particularly in December, they bring with them cloudy weather and rain. There is a perpendicular high cliff of majestic appearance, about 3½ leagues westward from Funchal, called Point de Sol, with a small bay to the eastward of it, said to have anchorage in it near the shore. In westerly gales and stormy weather, Point de Sol, (Point of the Sun) is often painted with beautiful portions of rainbows, which give it a grand appearance.

Current.

Rainy season.

Point de Sol.

There have been a few instances, of hurricanes blowing down through the Valley of Funchal; lately, a condensed cloud poured a torrent of water on the mountain at the head of the valley, which deluged many vineyards in its passage, and washed away some of the houses in Funchal.*

Storms.

Geo. site of Funchal.

Funchal is in lat. 32° 37′ 30″ N. lon. 16° 55′ W. by the French astronomers. The celebrated Capt. Flinders, and Mr. Crosley the astronomer, made it in long. 16° 56′ W. The observations and chros. of Captains C. C. M'Intosh, Heywood, and Capt. Milliken Craig, three navigators of great ability, make Funchal in long. 16° 50′ W. 16° 51′ W. and 16° 52′

* The small-pox is much dreaded at Madeira; were a ship discovered to have this distemper on board, she would be ordered to leave the port.

W; the latter is probably nearest the truth, being nearly the mean of the whole. In the road, about ¾ of a mile off the Loo Rock, the observed latitude I made 32° 36′ 33″ N. Variation 21° W. in 1811.

At leaving Funchal, ships should steer directly from the shore, to prevent being baffled by calms or eddy winds under Point de Sol; or the Brazeu Head, for vessels are liable to calms under the high land to the westward. Calms under the High Land.

## *DIRECTIONS for SAILING from MADEIRA to the SOUTHWARD:*

### SALVAGES, CANARY, AND CAPE VERD ISLANDS.

DEPARTING FROM MADEIRA, or after passing it to the westward, the track most advisable is to the westward of the Canary, and Cape Verd Islands, at any discretional distance, or barely in sight of them. By adopting this route, steadier winds may be expected, than by passing close to, or among these islands. The Britannia outward bound in November, 1803, had W. S. W. and S. W. winds, and was several days close to the coast of Africa in latitude 29° N. In January, 1795, the Swallow, after passing in sight of the Canary Islands to the westward, had the winds from that quarter, which obliged her to pass to the eastward of the Cape de Verd Islands; it therefore, seems preferable, to keep to the westward of all the islands, which is the track now generally adopted. Proper to keep to the westward.

If a ship be bound to Teneriffe, or intend to pass between the Canaries, or is laid off to the S. S. Eastward after passing Madeira, care is requisite to avoid the SALVAGES, which must not be approached in the night. Salvages.

Captain James Mortlock, an excellent observer and astronomer, passed within 1½ mile of the southern Salvages, in the Young William, and made a plan of them; these consist of two islets, with several rocks about them, from which the Great Salvage lies 3 or 4 leagues N. Eastward, being a single high rock that may be seen 8 or 9 leagues. No dangers were discernible between the great Salvage and the Piton Group. He made the Piton or southernmost Islet, in lat. 30° 8′ N. lon. 15° 42′ W.; and the Great Salvage in lat. 30° 14′ N. The longitude from these Islets, was measured to Ferro by chronometers, in a run of 24 hours, and rests on Ferro, being in 17° 58′ W., as the chronometer measured 2° 16′ W. from the Piton or southern Salvage to Ferro. Description.

The Great or North Salvage, by mean of the observations of different navigators, is in lat. 30° 13′ N. lon. 15° 46′ W., and the Piton or South Islet in lat. 30° 5′ N. long. 15° 50′ W. and Geo. site.

CANARY ISLANDS, are eleven in number, (four of them small) extending from lat. 27° 40′ to 29° 20′ N. and from lon. 13° 35′ to 18° 6′ W. They are mostly high, with steep rocky shores, rendering the landing often impracticable, and they are all destitute of safe harbours for large ships. Canary Islands.

PALMA, the north westernmost of these Islands, is 8 leagues long and 6 leagues broad, and is frequently seen by the outward-bound East-India ships. It is high, with a bold coast, by which some navigators run towards it with great confidence in the night; but several ships have been nearly lost on this island in dark nights, the lights on the impending mountains, first shewing their situation. Captain L. Wilson, a scientific observer, places Palma, the north point, in lat. 28° 51′ 20″ N. lon. 17° 48′ 40″ W., the west point in lat. 28° 46′ N., lon. 18° 4′ 30″ W., and the south point in lat. 28° 32′ N. lon. 17° 54′ 45″ W. This island is said Palma. Geo. site.

to be more subject to the westerly winds and rains than any of the others. Santa Cruz, the chief place, is near the middle of the east side.

The channels among the Canary Islands are clear of dangers, except a sunken rock laid down in some charts in lat. 27° 52′ N., in the channel between Canary and Teneriffe, about 7 leagues from the latter, and 5 leagues west from the former. It seems uncertain if this danger really exists, though it may be proper to avoid its assigned position. Many of the outward-bound ships pass between Palma and Gomera, when laid off to the eastward by westerly winds, or otherwise.

The channels clear, among the Canaries.

Santa Cruz.

SANTA CRUZ, in the Island Teneriffe, is in lat. 28° 29′ N. lon. 16° 22′ W. being the port generally used by ships which stop at these Islands to procure refreshments. It is on the east side of the island, and the road, though indifferent, is one of the best in the Canaries. Ships going in, should not bring any part of the town to the northward of west, for fear of being becalmed by the high land under the peak, and drifted on the rocky shore, where no bottom is found close to it, with 200 fathoms line.

Anchorage.

Merchant ships and small vessels anchor to the N. Eastward of the pier, off the town, in 18 and 20 fathoms, distant from the shore half a mile. Ships of war anchor off the northernmost fort, about half a mile distant from it, with their outer anchor in 36 fathoms, and the inner one in 15 or 18 fathoms. The Hindostan, in October, 1792, at anchor in 28 fathoms dark mud, had the southernmost steeple west, the northernmost fort north, and the easternmost point E. ½ N. The bottom being foul in many parts of the road, it is customary to buoy the cables from the ground. Vegetables are plentiful, also the fruits common in Europe, and good water is easily procured when the surf is not great on the beach. This road is exposed to easterly winds, but these seldom blow hard, although it has sometimes happened, that ships have been driven from their anchors, on shore. Santa Cruz is an excellent place for procuring a supply of cheap wines, which are of a weak quality. The Peak of Teneriffe is in lat. 28° 18′ N. by Captain Cook; and in 28° 15′ 38″ N. by the Requisite Tables. It may be seen about 45 leagues when the atmosphere is clear, being about 12,300 feet elevated above the level of the sea.—Variation 19° W. in 1800.

Refreshments.

Oratava.

ORATAVA, on the N. W. side of the island, has a very indifferent Road, where ships stop sometimes to take in wine: the anchorage is in 50 fathoms about 1½ mile off shore, with the Peak bearing S. W. and a pilot should be kept on board. Straggling rocks project 2 or 3 ships lengths from the shore, on which the sea breaks furiously: this Road is very dangerous in the winter months, from September to May.

Grand Canary.

GRAND CANARY, 12 leagues S. E. of Teneriffe, is nearly round, being about 11 or 12 leagues in extent; it is the best watered, and most fertile of the islands. Palmas, the chief town, is on the N. E. side of the island; its road is sheltered from N. Eastward by that point of the land stretching out in a peninsula, and having some rocks adjoining.

Gomera.

GOMERA, distant about 5 leagues to the S. W. from the coast of Teneriffe, is 6 leagues long, and its medium breadth 3 leagues. Palmas, the chief place, is in a bay on the east side, sheltered from the northward by a projecting point.

Ferro.

FERRO, the S. Westernmost of the Canary Islands, distant 10 or 11 leagues to the S. W. of Gomera, is 6 leagues long and 3 leagues broad. El Golfo, on the east side, is the chief village. These islands are destitute of harbours.

Fortaventura.

FORTAVENTURA, is about 20 leagues long, and from 2 to 5 leagues broad, the south end of it being about 10 leagues to the east of Grand Canary.

LANZAROTE or Lancerota, about 6 leagues long and 4 leagues broad, lies to the N. E. of Fortaventura, being separated from it by the Bocayno channel, in which is the Island Lobos, 2 leagues long and half a league broad, dividing the channel into two passages. That between Lobos and Fortaventura, is 2 miles wide with 5 fathoms water, and good anchorage. The channel next Lanzarote, is 4 miles wide, with 10 fathoms water. Off the north end of Lobos there is a large reef. Lanzarote.

On the S. E. side of Lanzarote, are two ports within reefs, called Puerto de Naos and Puerta Cavallos: the former is the northern one, sheltered from N. E. by the reefs, and here vessels may refit. It has two entrances between the reefs, with only 14 feet at high water in the northern, and 17 feet in the southern entrance; the depth within, is 27 to 10 feet, rise of tide 10 feet. Harbours.

PUERTA CAVALLOS, 1 mile south of the former, has only 12 feet in the channel, and within, 17 feet. Puerta Cavallos.

GRATIOSA, is 1 league north of Lanzarote, being 5 miles long and 1 mile broad, and the channel between them, forms the harbour of El Rio, in which the depth is 6 and 7 fathoms. Gratiosa.

SANTA CLARA, 6 miles N. W. of Gratiosa, and Alegranza, are small rocky isles destitute of fresh water. Santa Clara, &c.

The channel between Cape Juby on the African coast and these islands, is about 20 leagues wide, and clear of danger.

CAPE VERD ISLANDS, consisting of ten principal and some small Isles, extend from lat. 14° 43′ to 17° 13′ N. and from lon. 22° 28′ to 25° 27′ W.; they are mostly high land, and some of them afford bays, with anchorage tolerably sheltered. Cape Verd Islands.

Outward-bound ships for India or St. Helena, do not frequent the channel between Cape Verd and the islands, so often as formerly. Those which do, generally keep in longitude between 19° and 20° W. in passing the islands, to avoid some dangers supposed to lie to the eastward of them, not well ascertained: others keep nearer to the continent, the channel being clear on that side. Were it not for the great haze contiguous to the coast, occasioned by the dust and dry vapour, driven to seaward by the N. E. winds from the hot sandy desert, the passage near the main would be preferable to that outside the Cape Verd Islands, when the sun is far to the southward, for steady northerly winds then prevail near the continent, and the route is much shorter than that to the westward; but the obscure atmosphere, generally renders the inner passage unpleasant when observations are not regularly obtained. The outward-bound East India ships, frequented this passage about 40 and 50 years ago, and mostly steered along the coast adjacent to Cape Verd, keeping in regular soundings near the shore, with the lead going in the night, and under easy sail. Channel within them.

In some charts, a reef is placed projecting from Cape Verd to a small distance, but the Cape seems safe to approach, the soundings decreasing regularly to 8 or 10 fathoms off it. The Porgas Bank, placed in some charts about mid-channel between Cape Verd and the islands, probably has no existence, as many ships have passed over the position assigned to it without getting soundings. Porgas Bank uncertain.

The danger most avoided by ships in passing through this channel, is the Bonetta Shoal and Rocks, but it is difficult to assign any position to this danger; by some it is said to lie 22 leagues eastward of the channel, between Isle Sal and Bonavista. Mr. Norris, in a plan of this danger, makes its extent 3½ miles S. W. by S. and N. E. by N. the greatest breadth about 1½ mile, having 35 fathoms 2½ miles to the southward, and at 1½ mile distant from it 20 fathoms, coral; but he places it 42 leagues E. by N. from the north end of Bonavista. It is remarkable that this danger is so little known; I have seen journals Bonetta Shoal or Rocks, not known.

of ships which kept nearly in lon. 21½° W. in passing through the channel, and saw no danger.

Another supposed danger.

There is said to be a reef of rocks 6 leagues from Bonavista, about a cable's length in breadth, and two in length. Another account says, this danger is 10 leagues N. E. from Bonavista, and is even with the water's edge. As many ships in running for Bonavista or the Isle Sal, first get sight of these islands bearing S. W. or W. it is strange the danger just mentioned is never seen by any of them, and gives reason to doubt its existence.

Geo. Site of St. Anthony.

St. ANTHONY, in lat. 17° 2′ N. lon. 25° 25′ W.* and the north-westernmost of the Cape Verd Islands, is often seen by ships passing to the westward of them; and prior to the use of chronometers and lunar observations, it was desirable to see this island, Palma, or Madeira, in order to correct the reckoning. Although this is now not requisite, if a ship have good instruments on board, St. Anthony may, notwithstanding, be passed in sight, without

Height.

fear of any delay by calms or light winds, if not approached too close. By admeasurement I made the summit of St. Anthony 7400 feet above the surface of the sea, it may therefore be seen near 30 leagues distance from a ship's deck in clear weather, which is seldom the case, hazy or cloudy weather mostly prevailing about these islands.

Channels, and other islands.

The channel between St. Anthony and St. Vincent is very safe; the Lord Eldon passed through it in July, 1802, and thought it near 5 leagues broad. In the Young William, Captain Mortlock, came through the same channel, and measured 36 miles east from St. Anthony to Brava, by chronometer. In the charts, Brava is in general placed from 15 to 20 miles east from St. Anthony. There is reason to think, the relative positions of Brava, Fuego, &c. in longitude from St. Anthony, are *greater* than marked on the charts.

Directions.

If an outward-bound ship is to stop at Porto Praya, in the Island St. Jago, which is frequented by ships in want of water, it will be prudent to steer for the Island Sal, or Bonavista; and to avoid the danger to the westward, and south-west of the latter, she may pass on the east side of these islands; or on the west side of Sal, if the wind is far from the northward, then well to the westward of the shoals, and afterward for Isle May, passing also to the westward of it, she will easily reach Porto Praya Rood. If the wind incline from eastward, to pass to windward of them will be most convenient for reaching Porto Praya with speed. In running for these islands it is proper to look out in time, the current generally setting to the southward amongst them, sometimes strong.

Sal.

SAL, is high and bold, with two peaks on it, and may be seen 14 or 15 leagues in clear weather. The easternmost peak is highest, and the land between them being low, they appear like two separate islands when first seen; on its west side is Mordeira Bay, one of the best among the Cape Verd Islands; the latitude of the body of this island, is about

Geo. site.

16° 45′ N., the north-west point about 16° 50′ N., and the longitude 22° 55′ W., or 35 miles east of Porto Praya, by chronometers.

Bonavista.

BONAVISTA, is very uneven, composed of alternate hills and vallies, and in some places, low points project into the sea; the south-east extreme of this island, in particular, is a low projecting point, not discernible until near it. From the low point, a reef of rocks

Ship lost on the reef off it.

and foul ground extends nearly a league to seaward: on this reef, the outward-bound East-India ship, Hartwell, was wrecked about 26 years back, her cargo and most of the treasure lost. The Resolution, Captain Cook, in her voyage to the South-Sea, was nearly

* The Russian Circumnavigator, Captain Krusenstern, made the S. W. point in lon. 25° 24′ W. Captain Lisiansky made it in lon. 25° 23′ W.; I made the summit of the island by noon observation and chronometers as stated above.

sharing the same fate in the night, owing to a southerly current. The east side of this island, has a reef extending all along it, to a considerable distance.

The N. W. end of Bonavista is in about 16° 14′ N. lat. and in lon. 22° 52′ W. and the S. E. end in lon. 22° 32′ W., or 5° 41′ W. from Funchal by chronometer. This island and Sal bear nearly north and south of each other, the channel between them being 7 or 8 leagues wide. Geo. site.

MAY ISLAND, bears from Bonavista nearly S. S. W. distant 14 or 15 leagues: a reef of rocks projects from the north end of Isle May, to about 2½ miles distance. This island is pretty high at the centre, uneven, and hummocky, and has anchorage under the S. W. end in 7 or 8 fathoms, in a kind of bay, called English Road. The shore to the eastward, and abreast the town of May is steep, bluff, and rocky; but to the westward, a low white sandy beach extends to a rounding point, from which a spit of sand and coral stretches out a few cables lengths, at a small distance from which there is no ground at 40 and 50 fathoms. This spit may be rounded in 17 to 15 fathoms, and a ship should not anchor in the road farther out than 16 or 17 fathoms, as these depths are on the edge of the bank. His Majesty's ship Polyphemus, at anchor in 16½ fathoms, had the west point of the bay bearing N. 10° W., the town East, and the south point of the bay S. 59° E., off shore 1 mile. From this anchorage, the chronometer measured 17½ miles west to the anchorage of Porto Praya, and 39 miles east to the east end of Bonavista. The north point of the island is in lat. about 15° 20′ N. and 23 miles east of Porto Praya, by chronometers. All the other Cape Verd Islands are high, and most of them have places under the south or south-west sides, where vessels may anchor.* Island May, and reef.

LETON ROCK, OR REEF, is very dangerous, and much in the way of ships that pass to the westward of Bonavista. There seems to be another reef, considerably to the northward of the Leton Rock, and much nearer to Bonavista. These dangers, render the channel to the westward of Bonavista unsafe in thick weather, or in the night; for it is thought the sea does not break on these reefs with smooth water, but when there is much swell, breakers roll over them. Leton rock. Another danger.

The London, in. June, 1795, saw the northernmost breakers: after passing to the westward of Sal, she saw Bonavista, bearing S. E. by S. 7 or 8 leagues; from hence, she steered by compass S. ½ W. 6½ miles, S. by E. 5½ miles, S. by W. 6½ miles, being then 4 P. M. saw from the deck breakers, bearing from S. S. E. ½ E. to S. E. distant 6 or 7 miles; steered S. by W. ½ W. 6½ miles to 5 P. M. the breakers then distant 3½ miles to the eastward.

The Dianna, in October, 1805, passed near the Leton or Southern Reef. At 1 P. M. October 21st, Bonavista E. S. E. 7 or 8 leagues, steered S. by W. 6 miles, S. by W. ½ W. 12 miles, being 4 P. M., breakers first seen at 3 P. M. now bore E. S. E. 4 miles.

By the relative positions of these ships from Bonavista, and their courses steered till near the breakers, it would seem that the danger seen in the Dianna is about 4 leagues to the southward, and considerably to the westward of that seen in the London, if these ships were not differently acted on, by currents or otherwise.

The danger of running in the vicinity of these reefs in the night, has been fatally experienced by the loss of the Lady Burgess, one of the outward-bound India fleet, which ship struck among the breakers on Leton Rock, at 2 A. M. 19th of April, 1806. The Alexander, Sovereign, Lord Nelson, and other ships of the fleet, narrowly escaped, after the breakers A ship lost on Leton Rock.

* On the south side of St. Nicholas, there appears to be several anchoring places. Captain Davis watered there 7th May, 1599, when pilot of a Dutch ship bound to India. He sailed from thence the 9th, and fell in with the coast of Brazil in lat. 7° S. on the 9th of June; not being able to beat round Cape St. Augustine, he bore away for Fernando Norhona, anchored there, in 18 fathoms water, on the north side of the island the 15th, where he remained until the 26th of August, having procured good water, provision, and refreshments of various kinds.

were perceived close aboard. The Lord Melville struck three times, and slipped off the rocks into 25 fathoms, at the time the Lady Burgess was observed standing directly among the breakers. It appears from the journals of the fleet, combined with information received from several of the commanders, that the Leton Rock, or Reef, is composed of coral, no part of it above water. Captain Swinton, late commander of the Lady Burgess, thinks that the extent on which a ship would strike is not above a cable's length, and that there are no breakers on it in fine weather. To the northward, it is steep to, but this danger seems to be the northern limit of an extensive bank of coral soundings, which extends a great way to the southward, and a considerable distance to the eastward and westward. The Asia had 52 fathoms coral at day-light, when the breakers and wreck of the Lady Burgess bore E. by N. distant about 6 miles, and other ships had soundings from 25 to 50 fathoms to the west and south-west of the reef, at 2 to 5 or 6 miles distance. Directly after striking, the Lord Melville had 25 fathoms, with her head to the eastward, and shortly after 30 fathoms; she hove to, with her head easterly until day-light, and had from 30 to 40 fathoms, all coral soundings. Some of the other ships carried soundings on the Leton Bank for 10 or 12 leagues to the southward of the rock, generally coral, sometimes intermixed with sand and shells, and never had less than 20 fathoms; probably, therefore, this coral bank is not dangerous, except on the rock at the northern extremity, already described. By mean of the observations and chronometers of the fleet, the Leton Rock is in lat. 15° 49′ N., lon. 23° 14′ W., and seems to be situated directly north from the Island May, being more to northward and westward than placed in most charts. Its true relative position from any of the islands, is not however, ascertained, for no land could be discerned from any of the ships when near the rock, on the morning after the loss of the Lady Burgess, taking her crew from the wreck. Captain Cook, bound to the South Sea on discovery, had soundings 60 fathoms, the Island May bearing S. S. E. 5 leagues; these soundings were probably on the southern extremity of Leton Bank, as he had previously seen the breakers on the rock, after passing Bonavista on the east and south-east sides.

Description of it,

and the Bank.

Geo. site.

How to steer from Isle May, to the S. E. Point of St. Jago.

IN running for Isle May in the night, the north part of it must not be approached too close, on account of the reef already mentioned off its northern extremity. This island should also be passed on the east side, if the wind hang from eastward, and when round the south point, a ship should steer westward for the south-east end of St. Jago, with the wind at east or E. N. E. ward; but with the wind inclining from northward or N. N. west, the Island May ought to be passed on the western side, then a direct course followed for the south-east point of St. Jago.

St. Jago.

Porto Praya Bay.

A false bay.

This point appears low, when seen either from northward or southward, and projects a considerable way into the sea. To the S. W. about 7 miles from it, is Porto Praya Bay, the principal port in the island St. Jago. Between the east point of Praya Bay and the south-east point of the island, but nearer the latter, a bay resembling that of Porto Praya is situated, which has several cocoa-nut trees, and houses at the bottom of it. Several vessels have mistaken this dangerous bay for the other, and were in danger thereby. From hence to the east point of Praya Bay, the shore is mostly perpendicular.

Directions.

PORTO PRAYA FORT, situated on a small cliff, is a mark by which that bay may be distinguished from the false one; but the most certain mark is, that the north or east point of the latter is surrounded with breakers, whereas the east point of Praya Bay is high, steep, and free from danger. In running for this place with a brisk north-east wind, a ship should have a reef or two in her topsails when she approaches the east point of the bay, and this point may be passed within the distance of a cable's length, in 8 or 9 fathoms; the same distance from the eastern side of the bay, in 7 or 8 fathoms, is proper in sailing to the anchorage. The eastern shore of the bay is high, and all the land seems parched and barren.

Porto Praya is a fine bay, the two points which form it, bearing from each other about W. by S. and E. by N. $1\frac{1}{2}$ or $1\frac{3}{4}$ mile distant; and it is of equal depth. After passing the east point, the fort at the bottom of the bay soon opens, to the westward of which, in a valley, are several cocoa-nut trees, and a small house. A small black island, flat at the top, called the Isle of Quails, is situated in the west side of the bay, having a rocky projection from its south end about half a cable's length; there is also a rocky ledge off the north end, where the water is in general shoal, for 3 fathoms is the greatest depth between this isle and the fort. Between it and the shore, the channel is only navigable for boats. From the west point of the bay, some rocks extend to seaward, and it requires care to avoid them, in sailing from the anchorage in the night.

Best anchorage.

The best anchorage is, to bring the fort N. W. $\frac{1}{2}$ N. by compass, about 1 mile, the east part of Isle Quails W. by S. or W. by S. $\frac{1}{2}$ S. $1\frac{1}{4}$ mile, in 7 or 8 fathoms; but nearer to the N. E. side of the bay, is more convenient to weigh from in light winds, or otherwise, to prevent being carried near the point of rocks to leeward by the currents, before a ship has good way through the water. The Earl Talbot, in $7\frac{1}{2}$ fathoms, black sand, had the flag-staff on the hill N. W. by N., Jubaroon Point, or west extreme of the bay S. W. by S., south extreme of Quail Island W. by S. $\frac{1}{2}$ S., and the east point of the bay E. S. E. $\frac{1}{4}$ S., off the landing place 1 mile, off the north-east shore 2 cable's lengths.

Winds and weather.

The winds are generally in the north-east quarter, and frequently the weather is cloudy with squalls; here it seldom rains, but a dry haze mostly prevails about these islands. In December and January, the winds hang sometimes far to the eastward, but they veer at times in the same season to the northward.*

ST. JAGO, or YAGO, the chief of the Cape Verd Islands, is about 40 miles long and 20 miles broad; it is mountainous and generally sterile, but having fertile spots which produce abundance of fruits and vegetables.

The cistern which supplies the ships with water in Porto Praya Bay, is at the bottom of the hill upon which the castle is built, about a $\frac{1}{4}$ of a mile from the beach, and in common seasons, if drawn dry in the evening, is full again next morning. The water is not very good, being more or less brackish, particularly in dry seasons. At such times, there is a scarcity of all the necessaries of life, and the wretched natives perish in great numbers by famine. This is at all times an indifferent place for a ship to stop at for refreshments; and in very dry seasons, the water although indifferent, is not to be had in sufficient quantity. The anchorage in the Bay of Porto Praya is in lat. 14° 55′ N. lon. 23° 30′ W., by mean of many ships observations and chronometers. Variation 14° 30′ W. in 1809.

Water in dry seasons scarce.

Geo. site.

ST. VINCENT, 5 leagues S. E. of St. Anthony, has wood, water, and wild goats; also said to have anchorage all round it, with a good road called Porto Grande on the north side.

St. Vincent.

But the bay on the S. W. side of the island is the safest anchorage, on account of the prevailing N. E. trade wind. Here the Devonshire anchored, in 22 fathoms, sand and bits of coral, on her passage out to India in 1766, about $2\frac{1}{2}$ or 3 miles off shore, and 4 miles from each of the extremes of the island One well was discovered, and another was dug near it at the head of the bay, where she filled up her water during a stay of several days.

* When the weather is settled, there are often regular land and sea breezes in the Bay of Porto Praya; the sea breeze setting in near noon, with a great surf on the shore, and ending at four or five o'clock in the afternoon. The north east wind sets in towards evening, and continues during the night. As there is generally some surf on the beach, boats should lie at their grapnels, and the casks of water be hoisted into them, after being filled at the well or cistern, and rolled down and floated through the surf. His Majesty's ships Polyphemus and Africa, with a fleet of transports, watered at this place in January, 1807, and found the water then very good. Capt. Heywood, advises large ships to send on shore a pump to place in the well, by which they will be sooner watered than if the water were drawn up from it in the common manner with buckets. Some planks carried on shore will be useful to place under the casks in rolling them down, where the ground is stony or uneven, or where it is soft sand, which is often the case.

St. Lucia. ST. LUCIA, 3 leagues S. Eastward from St. Vincent, having some rocky islets between them, is of considerable extent, hilly, and not inhabited: at the S. E. part there is a good road, within two small isles called Round and White Islands.

St. Nicholas. ST. NICHOLAS, 5 leagues S. E. of St. Lucia, is the most pleasant of these islands, and the residence of the bishop: on the south side, there are several anchoring places. Grand, or St. George's Bay, on the N. W. side, has anchorage in 7 fathoms clear ground, close to the shore, but out in 9 and 10 fathoms the ground is rocky. Here refreshments may be procured, but there is no watering place for a ship.

Tarrafal bay, to the S.E. of the former, has good anchorage in 9 and 10 fathoms; and the inhabitants will bring water to the boats on asses.

Bravo. BRAVO, about 18 leagues to the westward of St. Jago, is high, about 4 leagues in circuit, and one of the most fruitful of the group. Porto Furno, on the east side, is a good harbour for small vessels, with a narrow entrance which obliges ships to warp out.

Porto Furreo, on the south side, and Porto Fajen Dago, on the west side, are also good havens, where water and refreshments may be procured.

Fuego. FUEGO, or ST. PHILIP, about 5 leagues long, has a volcano that continually smokes, sometimes throwing out flames and liquid sulphur. It has no running stream, and but a few mulatto or negro inhabitants, who raise vegetables, and rear goats and cattle.

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# A TABLE

## *DENOTING the EQUATORIAL LIMITS of the TRADE WINDS BETWEEN AFRICA and AMERICA;*

### AS EXPERIENCED IN EVERY MONTH OF THE YEAR.

Table shewing the interior limits of the trades. THIS TABLE, is the result of extracts, taken from the Honorable East-India Company's ships' journals. It will readily be comprehended, without any explanatory description:—But it may be observed, that the limit of the north-east trade marked in the table, is the place where the wind was found steady between north and east; and the limit of the S. E. trade, is the position where the wind was experienced settled between east and south-south-east. The winds which blow between S. by E. and S. S. W. to the northward of the equator; and the same winds which prevail from the equator to several degrees S. latitude near the African coast, are not marked as part of the south-east trade, but included in the space of variable winds between the trades. These southerly and south-south-west winds, adjacent to the south-east trade, prevail through several degrees of latitude, generally speaking; but are most settled when the sun is in the northern hemisphere, particularly in June, July, August, and September; his rays having in these months, greatly heated the northern regions, draw the southerly winds far to the northward of the equator. In this season, the progress of outward-bound ships to the southward, is greatly obstructed between the trades, by the southerly winds, and north-west currents which frequently attend them.

Many of the ships mentioned in this table, were in company with fleets, it being a period of war most of the time. The longitude is by chronometers, or lunar observations.

| Year. | Outward-Bound Ships. | Lost N. E. Trade. Month. | Latitude. | Longitude | Got S. E. Trade. Month. | Latitude. | Longitude | Remarks on winds, &c. between the Trades. |
|---|---|---|---|---|---|---|---|---|
| 1794 | Nancy ..... | Jan. 21 | 10° 30′ N. | 14° 00′ W. | Feb. 17 | 8° 00′ S. | 6° 00′ E. | Had S. W. winds near the African Coast. Veered to south in lat. 8° S. |
| 1795 | Swallow ..... | 29 | 10 30 | 18 00 | 24 | 4 00 | 2 30 | Had S.W. and S.S.W. winds till in lat. 4½° S, they veered to S. S. E. gradually. |
| 1799 | Taunton Castle.... | 24 | 5 00 | 22 00 | Jan. 31 | 2 00 N. | 22 30 W. | .. |
| 1802 | Arniston ..... | 24 | 7 00 | 16 00 | March 5 | 9 00 S. | 1 00 E. | Had calms and faint airs to equator, and S.S.Westerly winds in south latitude. |
| 1803 | Royal George .... | 30 | 7 00 | 15 00 | Feb. 25 | 9 30 | 1 30 | S.W. winds from 4½° N. lat. to 7° S. then vecring gradually to S. & S. by E. |
| 1792 | Rockingham .... | Feb. 6 | 7 00 | 21 30 | 17 | 00 30 N. | 24 00 W. | Southerly and variable winds. |
| 1792 | Ganges..... | 26 | 10 00 | 21 30 | March 7 | 2 00 | 21 30 | Variable. |
| 1792 | Lord Macartney .. | 26 | 11 00 | 20 30 | 8 | 2 30 | 20 00 | From 11° to 6° N. had N.W. winds. |
| 1793 | Royal Charlotte .. | 1 | 8 30 | 16 12 | 9 | 11 00 S. | 1 00 | Light S.W. wind from leaving Cape Palmas 12th Feb. and afterward S. by W. & S.S.W. |
| 1793 | Triton ..... | 3 | 5 30 | 21 00 | Feb. 11 | 1 00 N. | 18 30 | Variable winds mostly at southward. |
| 1793 | Woodcot ..... | 3 | 7 00 | 21 30 | 10 | 1 00 | 20 30 | N.Westerly and variable winds. |
| 1800 | Arniston ..... | 18 | 6 00 | 21 00 | 27 | 1 00 | 21 00 | Variable. |
| 1801 | Rose..... | 25 | 9 30 | 23 00 | March 5 | 2 30 | 20 00 | .. |
| 1803 | City of London .. | 21 | 8 30 | 16 40 | 27 | 7 00 S. | 2 00 E. | Had N.& N.Westerly airs to lat. 5° N.; then S.W.& S.S.W. light winds to 6° south lat. |
| 1792 | Europa..... | March 14 | 8 01 | 21 00 | April 3 | 1 00 N. | 22 00 W. | Southerly and variable. |
| 1792 | Middlesex ..... | 10 | 4 40 | 23 00 | March 18 | 1 00 | 23 00 | Variable. |
| | Sir Edward Hughes | 10 | 8 30 | 22 30 | 19 | 2 00 | 22 00 | .. |
| | Earl Weycombe .. | 15 | | 21 00 | 27 | 1 30 | 22 00 | .. |
| | Duke of Buccleugh | 29 | 6 00 | 20 00 | April 12 | 2 30 | 22 30 | Variable and southerly. |
| | General Goddard.. | 22 | 5 00 | 21 30 | March 27 | 2 00 | 22 00 | .. |
| | Valentine ..... | 31 | 7 30 | 14 30 | May 3 | 4 00 S. | 5 30 E. | Calms & S.W. breezes in N. lat. & S.S.Westerly from equator to 6° south. |
| 1796 | Georgina ..... | 18 | 10 00 | 18 00 | April 25 | 5 26 | 3 00 | N.W. & variable winds to 1° lat. south; then S.S.Westerly to 5° south. |
| 1797 | Sir E. Hughes .... | 24 | 2 00 | 19 30 | March 29 | 2 00 | 17 30 W. | Variable. |
| 1798 | Bombay Castle.... | 25 | 2 20 | 20 00 | 31 | 0 30 | 22 00 | .. |
| | Earl Howe ..... | 25 | 2 30 | 18 00 | April 4 | 00 00 | 21 00 | .. |
| 1802 | Marquis of Ely.... | 12 | 4 00 | 22 00 | March 21 | 2 00 S. | 24 00 | .. |
| | Canton..... | 14 | 3 30 | 23 00 | 25 | 4 00 | 25 00 | N.Westerly and variable. |
| | Cirencester ..... | 20 | 4 00 | 23 00 | 25 | 0 00 | 23 00 | Northerly. |
| 1802 | L. J. Dundas .... | 27 | 7 00 | 24 00 | April 10 | 3 00 | 19 00 | Variable. |

| Year. | Outward-bound Ships. | Lost N. E. Trade. Month. | Latitude. | Longitude | Got S. E. Trade. Month. | Latitude. | Longitude | Remarks on Winds, &c. between the Trades. |
|---|---|---|---|---|---|---|---|---|
| 1802 | David Scott ..... | March 22 | 6 30 N. | 17 00 W. | April 8 | 5 00 S. | 9 00 W. | S. Westerly light, variable, and calms. |
| | Marquis Wellesly.. | 2 | 8 00 | 23 00 | 7 | 3 40 N. | 17 00 | Variable. |
| 1803 | Carmarthen ..... | 11 | 3 30 | 21 00 | March 17 | 0 28 S. | 22 00 | .. |
| | Walpole ..... | 25 | 4 20 | 22 00 | April 5 | 0 00 | 21 00 | .. |
| 1804 | Windham ..... | 16 | 2 30 | 21 40 | March 24 | 0 00 | 23 15 | .. |
| 1803 | Experiment ..... | 12 | 3 00 | 21 30 | 14 | 0 36 N. | 21 20 | .. |
| 1804 | Sir Edward Hughes | 6 | 6 00 | 18 00 | 16 | 0 20 S. | 13 00 | Variable. |
| | David Scott ..... | 31 | 13 00 | 18 00 | April 11 | 3 30 | 21 30 | N. Westerly and variable. |
| 1792 | Melville Castle.... | April 1 | 6 00 | 24 00 | 5 | 3 30 N. | 25 00 W. | Variable. |
| | Duke of Montrose | 5 | 5 30 | 21 00 | 16 | 0 30 | 22 00 | .. |
| 1794 | Duke of Buccleugh | 20 | 1 30 | 19 00 | June 9 | 4 00 S. | 7 00 E. | Calms & S. W. winds from 5° N. to 3° S. and S. by W. near Anna Bona. |
| 1795 | Arniston ..... | 27 | 4 00 | 18 00 | May 6 | 1 30 | 15 00 W. | S. W. and S. S. W. winds. |
| 1797 | Rose ..... | 11 | 4 00 | 20 00 | April 15 | 1 00 N | 20 00 | Variable. |
| 1798 | Walpole ..... | 17 | 8 00 | 21 30 | 27 | 2 08 | 22 00 | .. |
| 1800 | Lord Nelson ..... | 15 | 4 00 | 21 00 | 20 | 1 30 | 23 00 | .. |
| 1801 | Lord Duncan .... | 28 | 4 00 | 25 00 | May 1 | 1 00 | 25 00 | Variable at northward. |
| 1802 | Lord Nelson .... | 8 | 3 36 | 20 00 | April 20 | 1 00 | 20 00 | Variable. |
| 1803 | Huddart ..... | 13 | 7 00 | 16 00 | 30 | 1 00 | [illegible] | South and S. Westerly. |
| 1804 | Lord Nelson ..... | 15 | 6 00 | 24 00 | 20 | 2 00 | 25 00 | .. |
| | L. J. Dundas .... | 15 | 5 25 | 25 00 | 20 | 2 00 | 26 00 | .. |
| | Fame ..... | 22 | 5 28 | 21 30 | 29 | 3 00 | 21 30 | .. |
| 1805 | Walpole ..... | 8 | 1 40 | 21 00 | 14 | 0 00 | 21 00 | .. |
| | Charlton ..... .. | 15 | 3 30 | 17 30 | May 3 | 3 30 S. | 21 00 | .. |
| 1791 | Kent ..... | May 5 | 5 20 | 20 00 | 8 | 3 30 N. | 21 00 | .. |
| | Dublin ..... | 28 | 6 25 | 25 00 | 29 | 6 00 | 25 30 | No light winds. |
| 1792 | Lascelles ..... | 2 | 7 00 | 21 00 | 7 | 4 00 | 17 00 | Variable. |
| 1792 | Sullivan ..... | 4 | 6 00 | 22 30 | 11 | 2 30 | 20 00 | Variable and Southerly. |
| | Rose ..... | 17 | 6 00 | 24 00 | 25 | 2 30 | 26 00 | .. |
| | Busbridge ..... | 18 | 7 00 | 22 00 | 25 | 2 00 | 25 00 | .. |

| Year. | Outward-bound Ships. | Lost N. E. Trade. Month. | Latitude. | Longitude | Got S. E. Trade. Month. | Latitude. | Longitude | Remarks on Winds, &c. between the Trades. |
|---|---|---|---|---|---|---|---|---|
| 1792 | Thetis | May 30 | 10° 00′ N. | 19° 30′ W. | June 17 | 2° 00′ S. | 25° 00′ W. | Southerly. |
| 1793 | Exeter | 6 | 9 00 | 21 30 | May 25 | 4 00 N. | 20 00 | .. |
| 1796 | Canton | 7 | 13 00 | 19 30 | 23 | 0 30 S. | 24 00 | .. |
| 1797 | Ceres | 5 | 4 00 | 20 00 | 13 | 1 30 | 22 30 | Southerly and variable. |
| 1798 | Contractor | 31 | 8 00 | 25 30 | June 9 | 5 00 N. | 20 00 | .. |
| 1799 | Glatton | 4 | 6 00 | 18 00 | 27 | 7 30 S. | 5 00 E. | Had calms; near St. Thomas, and in south lat. S.S.Westerly and southerly winds. |
| | Sir Edward Hughes | 4 | 3 40 | 20 30 | May 10 | 1 00 N. | 22 00 W. | Variable. |
| | Sir Step.Lushington | 16 | 6 00 | 21 30 | 23 | 4 00 | 20 30 | Southerly. |
| | Lord Hawkesbury | 19 | 7 30 | 18 00 | June 9 | 0 00 | 14 00 | Southerly. On May 30, was in 2° N. & 5½° W. lon. stood westward, with southerly winds. |
| 1801 | Princess Charlotte | 23 | 8 00 | 24 00 | May 31 | 1 40 N. | 24 30 | Variable. |
| 1802 | Earl St. Vincent | 10 | 7 00 | 22 00 | 21 | 3 00 | 20 30 | .. |
| | Anna | 10 | 7 00 | 21 30 | 18 | 3 30 | 20 20 | Variable and Calms. |
| | Cuffnel's | 28 | 8 30 | 22 00 | June 4 | 5 00 | 21 00 | .. |
| | Britannia | 30 | 9 00 | 22 00 | 12 | 4 00 | 17 30 | Southerly and variable. |
| | Tellicherry | 10 | 7 00 | 25 00 | May 14 | 3 00 | 27 00 | Variable. |
| | Herculean | 30 | 11 00 | 21 30 | June 10 | 2 30 | 24 00 | Variable and southerly. |
| 1803 | Warren Hastings | 5 | 9 30 | 23 40 | May 21 | 2 00 | 25 00 | .. |
| | Earl Howe | 8 | 0 | 23 00 | June 6 | 3 40 | 19 30 | .. |
| | Lord Castlereagh | 25 | 9 00 | 22 00 | 5 | 3 30 | 22 00 | .. |
| | Ceylon | 29 | 9 30 | 21 00 | 8 | 4 00 | 19 00 | .. |
| | Preston | 29 | 7 00 | 23 00 | 5 | 3 30 | 20 00 | .. |
| | Warley | 29 | 7 38 | 21 00 | 7 | 3 40 | 16 00 | .. |
| | Alfred | 30 | 9 00 | 21 40 | 7 | 4 20 | 16 30 | .. |
| | Ganges | 31 | 8 00 | 22 30 | 6 | 3 50 | 19 00 | .. |
| | Coutts | 30 | 9 30 | 21 00 | 7 | 3 40 | 17 00 | .. |
| | Abergavenny | 28 | 8 00 | 22 00 | 6 | 2 00 | 20 00 | .. |
| | Union | 5 | 10 00 | 24 00 | May 21 | 2 00 | 23 00 | Southerly. |
| | Ocean | 30 | 6 30 | 23 00 | June 8 | 2 00 | 23 00 | Variable. |
| 1805 | Coutts | 23 | 7 00 | 22 30 | 1 | 2 00 | 20 00 | .. |

| Year. | Outward-Bound Ships. | Lost N. E. Trade. Month. | Latitude. | Longitude | Got S. E. Trade. Month. | Latitude. | Longitude | Remarks on winds, &c. between the Trades. |
|---|---|---|---|---|---|---|---|---|
| 1791 | Bridgewater ..... | June 16 | 16° 00' N. | 19° 30' W. | July 4 | 5° 00' N. | 20° 00' W. | Had N.N.W. winds to lat. 12½° N. then variable |
| | Essex ..... | 23 | 13 30 | 16 00 | 13 | 3 00 | 16 00 | Calms and southerly winds. |
| | Bellmont ..... | 26 | 10 30 | 23 30 | 3 | 3 00 | 20 30 | Variable. |
| 1794 | Woodford ..... | 3 | 8 00 | 23 00 | June 11 | 5 00 | 20 00 | Variable mostly at southward. |
| 1795 | Young William ..... | 15 | 9 30 | 23 30 | 22 | 4 30 | 23 00 | .. |
| 1795 | Warren Hastings .. | 17 | 4 50 | 23 50 | 18 | 4 40 | 24 00 | Had no light winds. |
| 1798 | Tellicherry ..... | 30 | 12 00 | 26 00 | July 10 | 3 00 | 24 00 | Variable and S. Westerly. |
| 1800 | Hugh Inglis ..... | 1 | 10 00 | 25 00 | June 16 | 2 00 | 28 00 | Southerly. |
| | Rockingham ..... | 29 | 10 00 | 25 09 | July 14 | 2 00 | 26 00 | .. |
| 1801 | Abergavenny .... | 22 | 13 00 | 22 30 | 12 | 2 00 | 17 00 | Northerly light winds to 8° N. afterward S. Westerly and S.S.W. winds. |
| 1802 | Fame ..... | 13 | 11 00 | 25 30 | June 23 | 1 30 | 21 00 | Southerly and variable. |
| | Sir W. Bensley .... | 28 | 12 00 | 25 00 | July 15 | 2 00 | 20 00 | .. |
| 1803 | Woodford ..... | 22 | 10 00 | 21 00 | 7 | 0 30 | 12 20 | Had light N. Westerly airs and calms, then S. Westerly winds. |
| 1804 | Asia ..... | 15 | 8 30 | 23 00 | June 24 | 5 00 | 21 00 | Southerly and variable light airs. |
| | Bengal ..... | 16 | 8 00 | 23 40 | 24 | 3 30 | 22 30 | Variable. |
| 1792 | Earl Talbot ..... | July 9 | 13 00 | 24 00 | July 20 | 4 00 | 22 30 | Southerly. |
| 1794 | Sir E. Hughes .... | 23 | 10 00 | 22 00 | Aug. 2 | 4 00 | 20 00 | S.S. Westerly. |
| 1795 | Cirencester ..... | 31 | 14 00 | 26 00 | 15 | 3 30 | 22 | .. |
| 1796 | True Briton ..... | 17 | 17 00 | 25 30 | 16 | 2 00 S. | 8 00 | S. Westerly to S. by W |
| 1797 | Queen ..... | 5 | 8 30 | 22 30 | July 20 | 2 30 N. | 24 30 | Southerly. |
| 1798 | Osterly ..... | 1 | 9 30 | 25 00 | 11 | 2 00 | 25 00 | .. |
| 1799 | Woodford ..... | 12 | 9 00 | 23 00 | 20 | 2 40 | 15 00 | S. Westerly, |
| 1800 | Earl Spencer .... | 28 | 16 30 | 26 00 | Sept. 23 | 13 00 S. | 5 00 E. | S. Westerly light winds and calms. Crossed equator in 2° E. Aug. 26. |
| 1801 | Minorca ..... | 18 | 15 00 | 26 00 | Aug. 8 | 3 00 N. | 24 00 W. | Variable and southerly. |
| 1802 | Lord Eldon ..... | 11 | 11 30 | 23 00 | 24 | 9 00 S. | 1 00 E. | S. W. winds. Crossed equator in 41° E. July 30. S. W. & S. S. W. winds continued. |
| | Minerva ..... | 7 | 13 00 | 19 30 | 15 | 9 30 | 5 00 | S.W. & S. S. W. winds. Crossed the equator, July 25, in 4° E. longitude. |
| | Travers ..... | 9 | 13 00 | 25 00 | July 24 | 2 00 N. | 22 30 W. | S. S. W. and S. W. |
| 1803 | Essex ..... | 29 | 13 30 | 27 00 | Aug. 11 | 3 00 | 19 00 | S. Westerly. |
| | Princess Mary .... | 28 | 14 30 | 27 00 | 13 | 0 54 | 22 20 | S. and Westerly. |

| Year. | Outward-Bound Ships. | Lost N. E. Trade. Month. | Latitude. | Longitude | Got S. E. Trade. Month. | Latitude. | Longitude | Remarks on Winds, &c. between the Trades. |
|---|---|---|---|---|---|---|---|---|
| 1804 | Arniston | July 14 | 12° 00′ N. | 26° 00′ W. | July 27 | 4° 00′ N. | 22° 00′ W. | .. |
| | Lord Eldon | 31 | 8 00 | 21 00 | Aug. 8 | 4 30 | 22 00 | S. W. and southerly. |
| 1793 | Earl Fitzwilliam | Aug. 1 | 12 30 | 25 00 | 14 | 2 30 | 17 00 | .. |
| 1802 | Skelton Castle | 10 | 16 00 | 25 00 | Sept. 24 | 9 00 S. | 9 00 E. | S. Westerly on both sides of equator; crossed it Sept. 7, on meridian of London. |
| 1803 | Northampton | 9 | 11 30 | 25 00 | 1 | 2 30 N. | 25 00 W. | S. Westerly and southerly. |
| | Ann | 8 | 13 00 | 25 00 | Aug. 31 | 4 00 | 23 00 | .. |
| | General Stuart | 16 | 14 00 | 27 00 | Sept. 10 | 1 00 | 27 00 | .. |
| 1804 | Monarch | 7 | 13 00 | 25 00 | Aug. 24 | 1 00 | 18 00 | S. Westerly and variable. |
| 1794 | Dart | Sept. 26 | 9 00 | 21 00 | Oct. 6 | 1 00 | 13 00 | .. |
| 1796 | Carnatic | 5 | 11 00 | 23 00 | 10 | 11 30 S. | 7 00 E. | S. W. and southerly. Crossed equator 17th Sept. in 4° W. long. |
| 1796 | Queen | 5 | 11 00 | 23 00 | 9 | 8 00 N. | 3 00 | S.W. and southerly, Sept. 23. Crossed equator in 3° E. and saw Anna Bona, 28th. |
| 1798 | Georgina | 13 | 13 00 | 18 00 | 18 | 8 00 | 7 00 | S. Westerly, saw St. Thomas's Island, Oct. 1st, and next day the Coast of Africa. |
| 1799 | Swallow | 29 | 12 00 | 19 00 | 12 | 3 30 | 23 30 W. | S. Westerly and variable. |
| 1801 | Elizabeth | 9 | 15 00 | 27 00 | Sept. 24 | 2 00 | 19 00 | .. |
| 1803 | Georgina | 28 | 10 30 | 23 30 | Oct. 12 | 1 30 | 23 00 | Variable. |
| 1797 | Henry Dundas | Oct. 20 | 14 00 | 25 00 | 30 | 5 00 | 26 00 | Southerly and variable. |
| 1800 | Georgina | 16 | 8 00 | 23 00 | 20 | 4 00 | 24 30 | Variable. |
| | Prince Wm. Henry | 18 | | 24 00 | 24 | 3 00 | 24 00 | .. |
| 1801 | Princess Mary | 9 | 12 00 | 26 00 | 30 | 1 00 S. | 19 00 | Southerly and faint airs. |
| 1804 | Ocean | 18 | 8 00 | 22 00 | Nov. 4 | 3 00 N. | 18 00 | Calms and S. S. Westerly faint airs. |
| 1805 | Diana | 29 | 8 30 | 21 00 | 9 | 3 00 | 22 30 | Variable. |
| | Europe | 16 | 11 00 | 28 00 | Oct. 26 | 4 00 | 29 00 | Southerly and variable. |
| 1792 | Hindostan | Nov. 10 | 10 30 | 22 30 | Nov. 15 | 5 00 | 22 30 | Variable. |
| | Swallow | 27 | 6 00 | 21 00 | Dec. 1 | 4 30 | 21 00 | .. |
| 1796 | Bellona | 13 | 5 00 | 27 00 | Nov. 13 | 5 00 | 27 00 | Wind fresh at E. veered gradually to S. Eastwd. |
| 1798 | Cuffnells | 5 | 9 30 | 25 00 | 19 | 4 00 | 23 30 | Southerly. |
| | Sarah Christiana | 15 | 8 40 | 25 40 | 26 | 4 40 | 25 00 | Southerly and variable. |
| 1803 | Lord Duncan | 10 | 9 00 | 23 00 | 15 | 4 00 | 22 00 | Easterly and variable. |
| 1803 & 4 | Britannia | 25 | 13 00 | 20 00 | Feb. 1 | 7 00 S. | 1 00 | Calms & faint S.S.W. airs, near the Coast of Africa, and in general. |

| Year. | Outward-bound Ships. | Lost N. E. Trade. Month. | Latitude. | Longitude | Got S. E. Trade. Month. | Latitude. | Longitude | Remarks on Winds, &c. between the Trades. |
|---|---|---|---|---|---|---|---|---|
| 1797 | Carron ..... | Dec. 16 | 6 40 N. | 23 00 W. | Dec. 26 | 1 00 N. | 24 00 W. | Southerly light airs. |
| 1799 | Earl Mornington .. | 26 | 5 30 | 18 30 | 29 | 4 00 | 20 00 | Variable. |
| | Princess Mary .... | 13 | 6 00 | 21 30 | 17 | 4 00 | 22 00 | .. |
| 1799 & 1800 | Anna ..... | 31 | 5 20 | 21 30 | Jan. 3 | 4 20 | 22 00 | Faint airs. |

| Year. | Homeward-bound Ships. | Lost S. E. Trade. Month. | Latitude. | Longitude | Got N. E. Trade. Month. | Latitude | Longitude | Remarks on Winds, &c. between the Trades. |
|---|---|---|---|---|---|---|---|---|
| 1793 | Ganges ..... | January 7 | 0 30 N. | 18 00 W | Jan. 14 | 5 00 N. | 2 00 W | ariable. |
| 1798 | True Briton ..... | 20 | 1 00 | 22 00 | 28 | 5 00 | 23 30 | .. |
| 1802 | Rose ..... | 18 | 1 30 | 22 00 | 21 | 3 30 | 24 00 | .. |
| 1802 | Georgina ..... | 31 | 4 00 | 18 00 | Feb. 3 | 6 00 | 19 00 | .. |
| 1804 | Walpole ..... | 17 | 3 20 | 22 00 | Jan. 20 | 5 40 | 23 00 | .. |
| 1805 | Britannia ..... | 24 | 2 00 | 19 00 | 31 | 2 27 | 22 00 | .. |
| 1807 | Sarah Christiana .. | 21 | 3 00 | 23 30 | 21 | 3 20 | 23 | No calm between the trades. |
| 1793 | Ocean ..... | Feb. 25 | 1 30 S | 19 00 | March 3 | 2 00 | 20 30 | Light variable winds and calms. |
| 1793 | Europa ..... | 12 | 1 00 N. | 19 00 | Feb. 23 | 7 00 | 22 00 | Variable. |
| 1796 | Mary ..... | 5 | 1 30 S. | 20 00 | 5 | 0 00 | 00 00 | Got N.E. trade in a squall, and e time at S.E. trade abated. |
| 1797 | Georgina ..... | 12 | 2 50 N. | 20 00 | 17 | 4 40 | 23 00 | Variable and light airs. |
| 1800 | Georgina ..... | 22 | 3 00 | 20 00 | 25 | 4 00 | 21 00 | Variable and light. |
| 1801 | Princess Mary .... | 17 | 2 37 S. | 20 00 | March 2 | 4 20 | 23 00 | Variable. |
| 1803 | Bengal ..... | 27 | 2 00 N. | 19 00 | 10 | 7 00 | 19 00 | .. |
| 1803 | Britannia ..... | 4 | 1 00 | 21 30 | Feb. 10 | 4 30 | 23 00 | .. |
| 1804 | Union ..... | 22 | 2 00 | 22 00 | 26 | 5 00 | 24 00 | .. |
| 1793 | Bridgewater ..... | March 7 | 0 30 S. | 20 30 | March 10 | 3 00 | 26 00 | Northerly. |
| | General Goddard .. | 16 | 0 00 | 19 00 | 21 | 4 00 | 23 00 | Southerly and variable. |

| Year. | Homeward-Bound Ships. | Lost S. E. Trade. Month. | Latitude. | Longitude | Got N. E. Trade. Month. | Latitude. | Longitude | Remarks on Winds, &c. between the Trades. |
|---|---|---|---|---|---|---|---|---|
| 1793 | Luscelles ..... | March 10 | 1 40 S. | 19 00 W. | March 23 | 5 00 N. | 21 00 W. | Variable. |
| 1797 | Swallow ..... | 27 | 1 30 | 19 00 | April 7 | 3 30 | 22 00 | .. |
| 1803 | Cirencester ..... | 11 | 1 00 N. | 22 00 | March 16 | 2 00 | 25 00 | Northerly and variable. |
| | Lady Jane Dundas | 19 | 1 00 S. | 16 00 | April 1 | 5 30 | 21 00 | .. |
| | Tellicherry ..... | 18 | 1 10 | 21 00 | March 27 | 4 40 | 22 40 | .. |
| 1804 | Lord Duncan .... | 8 | 1 40 N. | 23 00 | 8 | 1 50 | 23 00 | No light winds between the trades. |
| | Huddart ..... | 22 | 1 00 | 15 00 | April 6 | 8 00 | 19 00 | Light and variable. |
| | Waller Brig ..... | 28 | 2 00 | 21 00 | March 30 | 3 00 | 21 00 | Light winds one day. |
| 1793 | Thetis ..... | April 22 | 0 00 | 23 00 | May 8 | 6 00 | 27 30 | Northerly. |
| 1800 | Sir Edward Hughes | 9 | 1 00 S. | 22 00 | April 15 | 4 00 | 25 30 | Variable. |
| 1802 | Lord Duncan .... | 28 | 1 00 N. | 20 00 | May 5 | 5 00 | 21 00 | .. |
| 1803 | Canton ..... | 13 | 3 00 S. | 21 00 | April 20 | 4 00 | 25 00 | .. |
| 1803 | Lord St. Vincent .. | 7 | 1 00 N | 22 00 | April 14 | 4 20 | 26 00 | Variable. |
| 1804 | Earl Howe ..... | 12 | 2 30 | 20 00 | 16 | 6 00 | 20 00 | .. |
| | Charlton ..... | 12 | 1 20 | 19 30 | 17 | 6 00 | 24 00 | .. |
| 1793 | Melville Castle .... | May 4 | 0 30 | 22 00 | May 11 | 7 00 | 22 30 | .. |
| 1798 | Rose ..... | 13 | 4 00 | 23 30 | 16 | 7 00 | 25 00 | Southerly. |
| | Marquis Lansdown | 14 | 4 30 | 22 30 | 16 | 7 00 | 24 00 | .. |
| | Admiral Gardner .. | 24 | 2 30 | 22 00 | 31 | 7 00 | 25 00 | Southerly and variable. |
| 1800 | Taunton Castle .... | 4 | 2 30 | 23 30 | 9 | 4 00 | 25 00 | .. |
| | Manship ..... | 16 | 1 00 | 20 00 | 22 | 6 00 | 20 00 | .. |
| 1801 | Lord Nelson ..... | 5 | 3 30 | 24 00 | 6 | 4 30 | 25 00 | .. |
| 1802 | Royal Admiral .... | 23 | 5 00 | 26 00 | 23 | 5 00 | 26 00 | No light winds. |
| 1792 | Kent ..... | June 2 | 1 00 | 22 00 | June 9 | 8 30 | 24 30 | Southerly and variable. |
| 1794 | Northumberland .. | 2 | 2 00 | 21 00 | 17 | 12 00 | 21 00 | Variable and calms. |
| 179. | Barron ..... | 11 | 0 30 | 17 50 | 19 | 9 00 | 17 40 | .. |
| 179. | Sir Edward Hughes | 12 | 1 30 | 19 30 | 24 | 12 00 | 25 00 | .. |
| 1799 | Bridgewater ..... | 11 | 2 30 | 24 00 | 18 | 8 40 | 25 00 | .. |
| 1800 | Woodford ..... | 7 | 1 30 | 23 00 | 17 | 8 30 | 26 00 | .. |
| | Earl Howe ..... | 29 | 5 30 | 21 00 | July 16 | 15 00 | 26 00 | Variable. |

| Year. | Homeward-bound Ships. | Lost S. E. Trade. | | | Got N. E. Trade. | | | Remarks on Winds, &c. between the Trades. |
|---|---|---|---|---|---|---|---|---|
| | | Month. | Latitude. | Longitude | Month. | Latitude | Longitude | |
| 1803 | Marquis Wellesly | June 1 | 3 40 N. | 22 00 W. | June 7 | 8 00 N. | 22 30 W. | |
| | Lord Nelson | 29 | 6 40 S. | 15 00 | July 16 | 11 00 | 27 00 | Easterly to 1° N. 22° W. July 6th. |
| | Cuffnells | 2 | 2 00 N. | 23 00 | June 7 | 7 00 | 23 00 | Southerly. |
| | Fame | 22 | 5 00 | 23 00 | July 2 | 12 00 | 26 00 | Southerly and variable. |
| | Sir William Bensley | 10 | 5 00 | 24 00 | June 15 | 9 00 | 25 00 | |
| | Dover Castle | 5 | 4 30 | 22 00 | 14 | 10 00 | 22 00 | |
| 1806 | Walpole | 4 | 4 00 | 21 00 | 9 | 7 30 | 21 00 | |
| 1793 | Bellmont | July 5 | 5 00 | 22 00 | July 15 | 11 30 | 24 00 | |
| 1794 | Exeter | 14 | 4 00 | 25 00 | 30 | 14 30 | 28 00 | Variable and northerly. |
| 1795 | Lord Hawkesbury | 13 | 0 00 | 21 00 | Aug. 1 | 11 40 | 27 00 | |
| 1799 | Tillicherry | 18 | 4 00 | 17 00 | July 29 | 13 00 | 27 00 | |
| | Sarah Christiana | 28 | 4 00 | 23 00 | Aug. 6 | 14 40 | 25 30 | S. W. and westerly. |
| 1802 | Earl Mornington | 9 | 1 30 | 20 00 | July 16 | 13 30 | 26 00 | S. W. and westerly. |
| 1804 | Abergavenny | 2 | 6 00 | 21 00 | 8 | 12 00 | 24 00 | S. W. and variable. |
| | Sir Wm. Pulteny | 22 | 10 00 | 23 00 | 26 | 12 00 | 26 00 | Variable. |
| 1805 | Arniston | 25 | 4 00 | 22 00 | Aug. 7 | 14 00 | 26 00 | S. W. and variable. |
| 1793 | Earl Talbot | Aug. 14 | 3 00 | 22 00 | 22 | 14 00 | 26 00 | |
| 1798 | Queen | 25 | 3 00 | 25 00 | Sept. 1 | 17 00 | 27 00 | S. W. brisk winds. |
| 1802 | Abergavenny | 2 | 5 00 | 24 00 | Aug. 9 | 13 00 | 28 00 | S. W. and variable. |
| 1803 | Travers | 12 | 5 00 | 26 00 | 18 | 13 00 | 28 00 | |
| 1804 | General Stuart | 26 | 5 00 | 21 00 | Sept. 6 | 16 00 | 27 00 | |
| 1795 | Duke of Buccleugh | Sept. 17 | 2 30 | 24 30 | 24 | 11 30 | 26 00 | |
| 1797 | Malabar | 4 | 4 00 | 21 00 | 18 | 13 30 | 28 00 | Variable. |
| 1801 | Anna | 15 | 4 00 | 22 40 | 29 | 13 30 | 27 30 | |
| 1802 | Princess Charlotte | 18 | 3 30 | 19 40 | 24 | 11 00 | 23 00 | South westerly. |
| 1804 | Preston | 23 | 3 00 | 24 00 | Oct. 1 | 12 00 | 25 00 | Variable light winds. |
| 1796 | Cirencester | Oct. 5 | 4 30 | 25 00 | 12 | 8 30 | 26 00 | |
| 1801 | Hugh Inglis | 20 | 2 30 S. | 17 00 | Nov. 2 | 10 00 | 25 00 | |
| 1802 | Princess Mary | 7 | 3 00 N. | 22 00 | Oct. 20 | 16 00 | 28 00 | |
| 1803 | Minerva | 6 | 2 00 | 22 00 | 14 | 10 30 | 22 30 | |

| Year. | Homeward-bound Ships. | Lost S. E. Trade. Month. | Latitude. | Longitude | Got N. E. Trade. Month. | Latitude. | Longitude | Remarks on Winds, &c. between the Trades. |
|---|---|---|---|---|---|---|---|---|
| 1803 | Experiment ..... | Nov. 30 | 3° 00' N. | 21° 34' W. | Dec. 7 | 7° 00' N. | 21° 40' W. | .. |
| 1804 | Princess Mary .... | 20 | 3 40 | 23 00 | Nov. 23 | 7 00 | 23 30 | .. |
| 1793 & 4 | Swallow ..... | Dec. 28 | 1 00 | 18 00 | January 5 | 6 00 | 19 00 | .. |
| 1795 | Nancy ..... .... | 25 | 3 00 | 19 30 | Dec. 29 | 6 00 | 21 00 | .. |
| 1796 | Earl Fitzwilliam .. | 23 | 1 00 | 21 00 | 27 | 4 00 | 22 30 | .. |
| 1797 | Carnatic ..... | 25 | 2 00 | 22 30 | 26 | 3 00 | 22 00 | Southerly. |
| 1798 | Hawke..... | 19 | 2 30 | 21 30 | 23 | 5 00 | 23 00 | Variable. |
| 1801 | Travers..... | 5 | 4 00 | 26 00 | 6 | 5 00 | 26 30 | .. |
| 1804 | Ann ..... | 20 | 1 00 | 23 00 | 27 | 5 00 | 25 00 | Calms and faint breezes. |
| 1805 | Northampton .... | 14 | 2 30 | 20 00 | 20 | 6 00 | 21 00 | Variable and light winds. |

*Excluding the few Ships which made the Eastern Passage to St. Helena, from the 238 contained in the foregoing Table, the Result exhibiting the Equatorial Limits of the Trades, betwixt the 18° and 26° West Longitude, will be shewn by the following Abstract.*

An abstract or table, shewing the equatorial limits of the trades.

| Months. | Lost N. E. Trade Outward, in Latitude. | Mean. | Got N. E. Trade Homeward, in Latitude. | Mean. | Mean out and Home. | Lost S. E. Trade, Homeward, in Latitude. | Mean. | Got S. E. Trade Outward, in Latitude. | Mean. | Mean out and Home. | Diff. of the 2 Mean Limits of N. E. & S. E. Trades. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| January | 5° to 10° N. | 7° N. | 3° to 6° N. | 4½° N. | 5⅔° N. | ½° — to 4° N. | 2¼° N. | 2° to 4° N. | 3° N. | 2⅔° N. | 3° |
| February | 5 10 | 7 | 2 7 | 5 | 6 | 2 S. to 3 | 1¼ | 1 | 1 | 1 | 4 |
| March | 2½ 8 | 5½ | 2 7 | 5 | 5⅓ | 1 2 | 1 | 0 | 2½ | 1¼ | 3⅔ |
| April | 4 9 | 6 | 4 8 | 5½ | 5⅔ | 2 2½ | 1 | 0 | 2½ | 1¼ | 4⅓ |
| May | 5 10 | 7 | 4½ 7 | 6 | 6⅓ | 1 N. to 4 | 2½ | 0 | 4 | 3 | 3⅔ |
| June | 7 13 | 9 | 7 12 | 9 | 9 | 1 5 | 3 | 0 | 5 | 3 | 6 |
| July | 8½ 15 | 12 | 11 14 | 12 | 12 | 1 6 | 4 | 1 | 5 | 3 | 8 |
| August | 11 15 | 13 | 11 14½ | 13 | 13 | 3 5 | 4 | 1 | 4 | 2½ | 9⅓ |
| September | 9 14 | 11½ | 11 14 | 12 | 11¾ | 2 4 | 3½ | 1 | 3 | 2 | 8 |
| October | 7½ 13 | 10 | 8½ 14 | 10 | 10 | 2 5 | 3 | 1 | 5 | 3 | 7 |
| November | 6 11 | 9 | 7 0 | 7 | 8 | 3 4 | 3½ | 3 | 5 | 4 | 4½ |
| December | 5 7 | 6 | 3 6 | 5 | 5½ | 1 4 | 2½ | 1 | 4½ | 4 | 2⅔ |

The numbers in this last column is the space of variable winds, &c. between the mean limits of the Trades. The columns of means do not always exhibit the exact mean of the two extremes for each month, but these mean numbers *incline* a *little* from the true mean, towards the extreme limit experienced by the majority of the ships.

The observations are rather few in number for some months, to obtain a correct mean; but the first column shewing the extreme limits for each, will be most useful to refer to, as it marks the situations where the trades may reasonably be expected to fail or commence.

John Seller's description of N. E. trade limits.

An interesting description of winds, printed in 1675, by John Seller, Hydrographer to the King, reprinted by Mr. Dalrymple, 1807, agrees nearly with the above abstract, in fixing the southern limit of the north-east trade, as experienced in the different months of the year. The remarks relative to the southern limit of the north-east trade, in the treatise mentioned, seem judicious and concise, and are as follows:

How far the N. E. trade wind bloweth in January, &c.

"In January, February, and March, the north-east trade wind bloweth commonly unto four degrees of north latitude, where at that time beginneth the south-east and easterly trade-wind.

How far in April.

In April, the north-east trade-wind bloweth commonly unto five degrees of north latitude, where then beginneth the south-east wind.

In May.

In May, the north-east trade-wind bloweth unto 6 degrees of north latitude, where at that time beginneth the south-east wind, somewhat more southerly.

In June.

In June, the north-east trade-wind bloweth unto 8 degrees of north latitude, where then beginneth the southerly wind.

In July.

In July, the north-east trade-wind bloweth unto 10 degrees of north latitude, where then beginneth the southerly wind somewhat westerly.

In August.

In August, the north-east trade-wind bloweth unto 11 degrees of north latitude, where the southerly wind begins somewhat westerly.

In Septem.

In September, the north-east trade-wind bloweth unto 10 degrees of north latitude, where the southerly wind beginneth.

In October.

In October, the north-east trade-wind bloweth unto 8 degrees of north latitude, where then the southerly wind beginneth somewhat easterly.

In Novem.

In November, the north-east trade-wind bloweth unto 6 degrees of north latitude, where the south-east wind beginneth.

In Decem.

In December, the north-east trade-wind bloweth unto 5 degrees of north latitude, where the south-east wind beginneth.

Variable winds between the trades.

It is to be observed, that between the north-east and the south-east trade-wind, the winds are subject to alteration, which variableness is sometimes found a degree or two sooner or later than the aforesaid latitude; and the more northerly you are, the more is the variableness found to be about the north and the north-east; and the more southerly you are, the more are the winds found to blow about the south-east and the south."

Southerly winds prevail.

This observation is partly correct, but it is generally experienced that the southerly winds prevail more than any other throughout the space of variable winds between the trades, more particularly when the sun has great north declination; the homeward-bound ships, therefore, are enabled at this season, to cross this space more quickly than the ships outward-bound, which they do generally in some degree, at all seasons.

Calms.

Calms and variable winds are also experienced during every month of the year in the space between the trades; the former seldom continue long, and the vicinity of the north-east trade seems most liable to them.

Sudden squalls.

Sudden squalls often follow these calms, which ought to be observed with great care, and sail reduced with activity when they are perceived to approach; for many of the East India Company's ships lose their topmasts, and sustain other damage, by these equatorial squalls, which give very little warning.

Storms do not happen near the equator.

These squalls are sometimes accompanied by whirlwinds, in their first effort against the resisting atmosphere, and may blow strong for an hour or two; but a gale of wind, or storm of duration, probably never happens far from land, near the equator in the open ocean, on any part of the globe; although in its vicinity, sudden gusts of wind and whirlwinds are experienced at times.

S. W. and W. S. W. winds, with much rain, often prevail in July, August, and sometimes in June and September, blowing toward the coast of Guinea, and sometimes as far north as the Cape Verd Islands; which winds are called the ***Line Westerly Monsoon***, by the navigators who trade to the gulf of Guinea.

# *DIRECTIONS for SAILING from the CAPE VERD ISLANDS across the EQUATOR:*

## ISLANDS IN THE SOUTH ATLANTIC, OR ETHIOPIC OCEAN.

THERE are many journals which tend to prove, that the north-east trade-wind is deflected by the projection of Cape Verd to the westward, and that ships which keep near the coast of Africa, lose the trade sooner than others which are at a greater distance from the coast. To guard against this, it is recommended by many commanders, to keep well to the westward at the time the north-east trade fails, with a view to continue it longer, to have fewer calms and baffling winds in the variable space, and to meet the south-east trade-wind sooner than if more eastward. By adhering to this precept, several ships have crossed the equator far west, then meeting with the south-east trade hanging far from the southward, and strong westerly currents, have made the Brazil coast, about Cape Roque, or farther to the westward, which greatly prolonged their voyage.

Trade wind deflected by Cape Verd.

The equator should not be passed far westward.

In the summer months, particularly when the sun is in the northern hemisphere, outward-bound ships should not run too far to the westward; for in this season, it has sometimes happened, that the north east winds have continued longer with ships in lon. 19° to 23° W., than with others which had separated from them, and lost the trade in 26° and 27° west longitude.

On whatever side of the Cape Verd Islands ships may pass, the most eligible situation at losing the north-east trade, is *probably* from lon. 18° to 23° W.

Best situation at losing the N. E. trade.

When the sun is near the northern tropic, the trade often fails ships near, or in sight of these islands; it is certainly best to pass to the westward of them at such times, at 8 or 10 leagues distance at least, to preserve the steady wind, and prevent delay, as light eddy winds prevail near, and amongst them in this season. When to the southward of the Cape Verd Islands, steer to the south-eastward, if the wind permit, and endeavour to get into longitude 18° to 23° W. at losing the north-east trade. If then the southerly winds commence, take advantage of the shifts to stand on the tack which gains most southing, and endeavour to cross the equator from 18° to 23° W., if the winds permit; but do not be induced to make a long tack either eastward or westward, with a dead southerly wind, in hopes of meeting a better, unless the wind should veer so far as to gain much southing.

Where to cross the equator.

The south-east trade, generally at its northern limit inclines far to the southward, particularly in July, August, and September; and the same has been known in other months. When a ship meets this trade, she should not be kept too close to the wind, or she will make little progress, but ought to be kept clean full, to enable her to make good way through the water to the south-westward, by which means she will soon get to the southward of the limits of the westerly* current prevailing about the equator, and to 4° or 5° north latitude: it also extends to 3° or 4° south latitude about Fernando Noronha; and from longitude about 27° W. to Cape Roque, it runs very strong, particularly from September to March.

Westerly currents near the equator.

In proceeding to the southward, the wind will draw more to the south-east, and finally to east and east-north-east at the southern limit of the trade.

WARLEY'S SHOAL, is described by Capt. Collins, of that ship, to be a small coral bank (which she passed over, at 7 A. M. May 7th, 1813) about 100 feet long and 50 feet broad, which was too distinctly seen to admit of any mistake; for its edges were clearly de-

Warley Shoal, doubtful.

* In winter, the currents sometimes from the Cape Verd Islands set easterly, and sometimes westerly to 4° or 5° N. latitude, at other times they are variable; but to the southward of 3° or 4° N. latitude, and westward of 20° or 22° West longitude, the equatorial current perpetually runs to the westward.

lineated, and upon it several ridges of rock appeared, with sand between them. The ship passed too quickly over it to admit of time to sound, as it was accidentally seen by Capt. Collins, when looking over the quarter. He thinks there may be full 7 fathoms water over the shoalest part; and a quarter-master, who also saw it, thinks the least water on this shoal may probably be 10 or 12 fathoms.

The fleet at this time consisted of 8 ships, including H. M. S. Salsette, their convoy; and by mean of all the observations and chronometers of those 8 ships, this doubtful rocky bank is situated in lat. 5° 4′ 23″ N., lon. 21° 25′ 40″ W. It is matter of regret, that it was not carefully examined, so as to have established its real existence.

It might have been a shoal of Devil-fish, which the Warley passed over, as they are gregarious, and very large near the Equator; and as they swim at great depths, their variegated backs appear exactly like coral rocks.

Geo. site of St. Paul's Island.

ST. PAUL'S ISLAND, called also Panedo and St. Peter's, in lat. 0° 55′ N. long. 29° 15′ W. by mean of many ships chronometers and lunar observations, is now correctly determined, as this small island has been seen by ships both outward and homeward-bound, although it is considerably to the westward of the *common* route of the latter, and no ship bound to the southward, should cross the equator so far west as this island.

Tellicherry passed near it, outward-bound.

The Tellicherry passed within 5 miles of it, May 17th, 1802, bound for India. A view was taken, when it bore from N. 30° W. to N. 37° W. distant 5 or 6 miles; by this view, St. Paul's seems to be a heap of rugged rocks, having low gaps between some of them; the northernmost is a small pyramidal rock, not so high as the others. The description annexed to the view in the journal, says, "This island is all rocks, about the height of a ship's mast out of the water.*

French account.

Mons. de Landeneuf, in the ship Le Curieux, was sent to explore this island in 1768; His account and the Tellicherry's are similar: He found it consisted only of a heap of steep rocks, covered with birds dung, without verdure, and had no place fit for anchoring, nor convenient for landing.

The variation off St. Paul's was 6° W. in 1802.

Fernando Noronha.

FERNANDO NORONHA, has not unfrequently been visited or seen by ships bound to India, occasioned by the currents having horsed them to the westward, after the failure of the north-east trade. This island has on it a high rocky peak, called the Pyramid, which is very remarkable, and seems to lean or overhang to the eastward, when it bears S. S. W.

Dangers.

The S. W. point is perforated, off which is a sunken rock at a considerable distance, dangerous to approach. From the S. E. part of the island a reef extends to seaward, and some sunken rocks at nearly a league's distance from the shore. There is also said to be a reef, on which the sea always breaks, about 3 miles from the east part of the island, with a channel of 10 to 15 fathoms within it, and that the pyramid is shut in with the highest hill when upon the rocks.

Currents.

The currents generally run strong to the westward about Fernando Noronha, therefore ships intending to anchor here, should always pass round the north end of the island, which is formed by a chain of several small islets, very near each other, having forts on some of them that command the anchorage.

Extent, produce, &c.

This island extends nearly 10 miles about S. W. and N. E. and is about 2½ miles broad; the shore is rocky and the surf frequently high; at such times there is no landing. It is not advisable to touch at this island, except in cases of necessity; for it appears that water is a

* It is about 35 feet elevated above the sea, and consists of a group of several rocks adjoining each other, with soundings of 30 to 80 fathoms near them, as found by a commander of the Navy, who surveyed and landed on it in 1813.

scarce article in the dry season, and when procurable, cannot always be got off from the shore on account of the surf. There is little rain, and they have been sometimes two years without any, then the rivulets were dried up, and vegetation quite parched; at such times, it cannot be supposed a ship would obtain much benefit by stopping at this place.

Outward-bound ships which touched here.

The General Stuart anchored at Fernando Noronha, September 15th, 1803, (outward-bound) in 18 fathoms water, the N. E. end of Wood Isle E. N. E., the S. W. end of Fernando Noronha S. W. by W., the Peak S. by W., Water Bay S. ½ E. off shore about 2 miles. She remained here four days, and could procure only nine casks of water, the well being nearly dry.

November 20th, 1805, the Ann, outward-bound, anchored in 17 fathoms shells and rocky bottom, extremity of Fernando Noronha from E. N. E. to S. W. by W., the Peak S. by W., the Church and Round Castle S. by E., the large Fort E. S. E., off shore 2 or 2½ miles.

November 22d, 1805, the Tigris anchored in a ½ less 9 fathoms, sand and rocky bottom, Cloven Rock N. E. ¼ N., Fort Island N. E. by E. ⅝ E., Fort Remedios S. S. E. ¼ E., Pyramid S. W. ¼ S., western extreme S. W. by W. ½ W., off shore about half a mile. These ships sailed in company 24th; the Tigris received 3 bullocks, the Ann received some stock and 12 butts of water, but they found great difficulty in getting the water from the shore, the surf being very high.

Anchorage.

There is good anchorage in 13 fathoms, fine white sand, off shore about 1 mile, with Fort St. Antonio E. by S. ½ S., Fort Remedios S. by W., Fort Conception S. S. W. ½ W., Pyramid S. 42° W. The road of Fernando Noronha is unsafe to lie in, with northerly or north-west winds, which are said to prevail from December to April; at other times, they are mostly south-east or easterly, and sometimes at north-east. The well which supplies ships with water is near the governor's house, but landing the casks and getting off the water is inconvenient. The wood is cut on a little island near the north point of the large one, but is not conveniently got into the boats on account of the rocky shore.

Inconvenient for wooding and watering.

Fernando Noronha is peopled with exiles from the coast of Brazil, and is well defended by forts built on the places most eligible for its security. It is hilly uneven land, and seen at 10 leagues distance in clear weather.

Geo. site.

The Pyramid is in lat. 3° 55′½ S. lon. 32° 35′ 30″ W. by mean of many ships observations and chronometers. The tide rises about 6 feet, and flows to 4 hours on full and change of the moon. There is very little variation at present, 1816.

Roccas.

ROCCAS, is a very dangerous low isle or reef, a little above water. Ships which pass between Fernando Noronha, and the Brazil coast, should be cautious in the night, if not certain of their relative position from Fernando Noronha; for the strong westerly currents are liable to carry them more to leeward than may be apprehended. As this shoal has proved fatal to the East India Company's ship Britannia, and King George transport, which ships were wrecked on it, at 4 A. M., November 2d, 1805, it may be proper to describe and shew the true situation of this dangerous reef.

Two ships wrecked on it.

Seen in 1761.

The Earl Elgin saw it in July, 1761, having first seen Fernando Noronha on the 13th, and on the 19th she had soundings on the bank off Cape Roque; at noon 23d, the Roccas bore E. ½ N. to E. ¼ S. distant 4 miles, latitude observed 3° 50′ S. This ship's longitude, by account, placed the Roccas 2° 12′ E. from Fernando Noronha, whereas it is about 50 miles west of the island; she had therefore experienced a westerly set of 3° 02′ in 10 days. In the Earl Elgin, they call it a low island, or more properly a shoal, that cannot be seen at 3 leagues distance; a sand bank, surrounded by rocks, with high breakers mostly all round, and a projecting point of breakers at the north and south ends of the shoal.

Portuguese account.

By the Portuguese, the Roccas is said to bear west, a little northerly, distance 15 leagues from Fernando Noronha.

Accounts of it from English ships' journals.

Captain I. Birch, who commanded the Britannia, says, "the Roccas are certainly not laid down right in any of the charts; they are only distant from Fernando Noronha 45 miles; their latitude the same as that island; the rocks most dangerous, are to the northward and north-eastward; the whole extent may be about 5 miles; the current set 2½ miles per hour to the westward; rise and fall of tide 6 feet."

In the fleet, several ships narrowly escaped the fate of the Britannia and King George, having separated several days before. The Leda frigate, with one division, led past the shoal, and just cleared it, when the Britannia and King George were wrecked. Several ships of the other division, under Sir Home Popham, saw the shoal on the following morning.

The Northampton's journal describes it as a dangerous shoal, very little above water, with breakers all round, except on the south-west, or lee-side, there appeared a white sandy beach, where a boat might land. The Glory's journal describes it as 2 low sand banks, when it bore S. S. E. 2 or 3 miles; and when on the west side of it, at 2 miles distance, she had ground 28 fathoms, coral rock.

Geo. Site. By mean of the observations and chronometers of 10 different ships, the Roccas shoal is in lat. 3° 52′½ S. lon. 33° 31′ W.*

Martin Vas rocks. MARTIN VAS ROCKS, are high and barren, the central one is largest, and may be seen from a large ship's poop at a 11 leagues distance; this is a little more easterly than the other two, although they are nearly on the same meridian, as they are all in one, bearing south. The northernmost and central rocks are near each other, but between the latter and the southernmost, there is a channel, through which the Chesterfield passed in March, 1800, and observed the lat. 20° 28′ S. when in mid-channel. When through, she hove to, in 12 fathoms, with the largest rock bearing E. N. E. about 1 mile distant, the bottom then visible, and caught plenty of rock-cod and other fish: the boat in sounding, found the depth decrease gradually over a rocky bottom, to 1½ fathom close to the largest rock.

The north rock is small, and the most westerly of them; they are all steep and inaccessible, and the distance between the two extremes is about 3 miles.

The breadth of the channel between these rocks and the island Trinidad, is about 8½ leagues.

Geo. Site. By mean of the observations and chronometers of 12 different ships, the central Martin Vas Rock, is in lat. 20° 28′ 30″ S. lon. 28° 42′ W. Variation 3° 0′ W. in 1797.

Trinidad. TRINIDAD, is about 6 miles in circumference, extending nearly south-east and north-west; it is high and uneven, and just discernable from a large ship's poop in clear weather, at 18 leagues distance. It is rocky and barren in general, but in some parts, there are trees about 12 or 18 inches diameter on the heights, particularly about the south part of the island. The shore is rocky and of difficult access, occasioned by the high surf that continually breaks on it in every part. At the east and south-west sides of the island, good water runs down in two small streams, it may also be procured at times from the rock that forms the south-west extreme. Excepting the times when rain prevails, these runs are very small, and it seems

Difficult of access. probable, that they may in some seasons be nearly dried up, if not entirely so. Ships should not stop at this island for water, unless they are greatly in want of that article, for the difficulty of getting it from the shore is great: the anchorage is also unsafe, as the winds are often variable, and should a gale happen from west or south-westward, they would be in danger of driving on the shore. Although Trinidad is within the southern tropic, the south-

* In some charts, a shoal is placed about 25 leagues south-westward, and another about 45 leagues W. N. W. from Fernando Noronha; probably these shoals do not exist, as several ships have passed over the places where they are laid down, without seeing any appearance of danger. The Sir Edward Hughes, in June, 1802, passed directly over the position assigned to the southernmost shoal; keeping a good look out, but saw no indication of danger.

east trade-wind is not regular; north-east and northerly winds often happen, particularly the former, and sometimes hard squalls or south-west gales have been experienced, which render the anchorage at this island hazardous. Anchorage unsafe.

The Georgina packet, anchored in October, 1799, at the north-west end of Trinidad, in 19 fathoms, fine black sand, and moored off shore about 3 cable's lengths; the extremes of the island from east to south, a large rock detached from it about a $\frac{1}{4}$ mile, S. S. W. $\frac{1}{4}$ W. about $\frac{3}{4}$ mile; found 10, 11, and 12 fathoms, coral, between the rock and the shore. The surf being great, they landed at one place with difficulty, and shot some wild hogs; good water was found about $\frac{1}{2}$ a mile inland, but it seemed almost impossible to get it from the shore on account of the surf, and must have been carried about $\frac{1}{2}$ a mile in small kegs, had they been in immediate want.

It is recommended for ships which may be obliged to stop at Trinidad, to endeavour to procure water, to anchor in 30 fathoms, about a mile from the west part of the island, that they may be able to clear it on either tack, should the wind blow from westward; for the Rattlesnake was wrecked in a westerly gale, and the Jupiter and Mercury, narrowly escaped destruction. On this side, almost detached from the island, there is a rock about 850 feet high, with trees on it, called the Monument or Nine Pin; it is of a cylindrical form. There is also a stupendous arch, which perforates a bluff rock, about 800 feet high; this is about 40 feet in breadth, near 50 in height, and 420 in length; the sea breaks through the arch with great noise, and there are more than 3 fathoms water under it, and in the bason formed at its east side. At the south-east end of the island, there is a rock of a conical form, about 1160 feet high, called the Sugar Loaf, with trees likewise on its summit, and whenever it rains hard, a beautiful waterfall of above 700 feet is projected from it. Particular description.

Captain Charles Lesley, of the Orford man of war, in his journal of 1773-4, mentions three bays at the south and south-west sides of Trinidad. He recommends the easternmost as the best, the western or middle bay being rocky, and the northernmost having shoal water in it. The easternmost bay must be situated at the south-east part of the island. Captain Lesley says, a church, with a cross on it, stands at the upper part of the bay, and that a ship may anchor in 6 fathoms, the church bearing W. S. W. and a point like the South Foreland S. W. by W. and may moor with one cable on shore.

The watering place, he describes to be near the church, and that a long boat may fill the water there with a spout or hose.

Notwithstanding this description of the bay at the south part of the island, it would certainly be imprudent for any ship to anchor there with the south-east trade-wind, and it probably ought never to be done unless the weather is very settled, and the wind fixed at northward; at all events, no navigator would approach so near as to moor with a cable on shore, except this were a safe harbour, which it certainly is not. Perhaps, there is at present, no vestige of a church at this place.

Trinidad is often seen by ships passing to the southward, through the S. E. trade, but is seldom visited by navigators, on account of its unsafe anchorage.

The Chesterfield rounded the north end of the island, very close, in March, 1800, and her boat went all round it, which appeared to be steep, and bold to approach; she anchored in 25 fathoms, with the Nine Pin bearing N. N. E. 1 mile: they could only land at one part about a mile from the watering-place, on account of the surf, and although good water ran down within 50 fathoms of the shore, they could only get it to the long-boat moored outside of the surf, by filling canvas bags holding about 10 gallons each, and hauling them off by a circular rope of communication, rove through a block in the boat. H. M. S. Bristol, anchored here about 30 years ago, and filled about 30 Tons of water in one day, with a long hose, when there happened to be little surf. The Chesterfield got about 30 young hogs,

which were very good; there are many wild goats on the island, but so shy, they cannot be caught.

Geo. Site. By mean of the observations and chronometers of ten different ships, the centre of the island Trinidad, is in lat. 20° 22′ 30″ S., and in lon. 29° 10′ W. Capt. P. Heywood, of the Royal Navy, made it 23° 38′ west of St. Helena, by mean of 4 chronometers, which would place it in lon. 29° 13′ W.; and some observers make it a little more westerly.* The Chesterfield made the variation 2° 18′ west, in 1800.

Ascension false. Ascension Island, placed formerly in the charts between Trinidad and the coast of Brazil, is now known not to exist.

Ascension. ISLAND ASCENSION, is about 3 leagues in length from N. to S. and 2 leagues broad, E. and W. and may be seen 15 leagues or more, in clear weather, there being several peaked hills on it; the highest, called Green Mountain, is situated near the S. E. part of the island, about 800 yards high, and appears a double peak in some views. Most of the hills are covered with red earth, like brick dust, being a decomposition of the volcanic rock, which forms this island. It has a most dreary aspect, the surface consisting of calcined rocks, and pumice stones, dangerous and difficult in some places to walk over, as they have little solidity, and are often sharp pointed and rough. There is no verdure except purslane, which grows mostly about the Green Mountain, and is found in April, May, June, and July. Captain Dampier (whose ship was lost on this island) is said to have discovered a spring of fresh water on the S. E. side of the High Mountain, about ½ a mile from its summit. At that time, 1700-1, he found plenty of goats and land crabs, near the spring of water: other navigators have not been so fortunate as to discover any spring on the island, but have found some rain water in hollows at the base of the mountain, which is probably evaporated in the dry season. The wild goats are very lean; rats and mice abound, and there are a few insects. The summit of the mountain is frequently enveloped in clouds or vapour, but it seldom rains here.

This island, is seldom visited, unless by a few ships homeward-bound from India, or whalers, who stop here for a supply of turtle. These were formerly in plenty, particularly in February, March, and April; but of late, so many American and other vessels have touched at this island, that turtle often cannot be obtained.

There is a bay of considerable depth and extent, close on the north side of the S. W. point of Ascension, about 2½ or 3 miles distant from the two bays where ships anchor. Captain Heywood, found the landing very safe in February at this bay, went to it in his gig, on the nights of the 24th and 25th of February, and turned 36 large turtles, whilst very few could be obtained by the people stationed at the bays contiguous to the anchorage. A ship intending to stop at Ascension, should stop in the usual place, and send parties to the westward round the extreme point, which bears about S. S. W. from the road; two or three sandy beaches will then open, the farthest of which is S. W. bay, and as this bay is not frequented nor much known, a large supply of turtle may reasonably be expected.

Directions for sailing to the anchorage. A ship intending to stop at Ascension, should steer round the N. point of the island, which is a low rocky point with deep water close to it, and may be passed within two cable's lengths with a commanding breeze: when abreast this point, Sandy Bay will soon be seen a little to the S.W., which is a small bay, with a white sandy beach, having a regular hill like a dome a little distance inland; this is called Cross Hill, from a cross placed there more than half a century back.†

* Captain Flinders made the S.E. point in lon. 29° 19′ W., by lunar observation, and 29° 23′ W. by chronometers.

† Captain Heywood erected a flagstaff on the summit of this hill in 1811, as he found the cross gone.

From the W. point of Sandy Bay, a reef of rocks projects out about 1½ mile, on which the sea breaks when there is much swell; at other times, there is no breakers on it. When a ship has passed the N. point of the island, she should haul up into the Sandy Bay, and anchor abreast the beach, in 15 or 16 fathoms sandy bottom, with Cross Hill S. by E. ½ E. or S. S. E. off shore about ¾ of a mile.* The best landing place is at the W. end of the bay, behind an isolated rock: this rock makes a sort of division between the Sandy Beach Bay, and another bay to the westward, which has also a sandy beach in some places, and may be considered a continuation of the easternmost bay. In this western part, there are some detached rocks; on one of which the Egmont struck in 1771, which was found to be a very small rock with ¼ less 3 fathoms on it, and 13 fathoms close to it on the outside; there was 13 fathoms between it and the shore, from which it was distant about 2 cable's lengths. The summit of the rock, where the depth on it was ¼ less 3 to 5 fathoms, was not of more extent than 4 or 5 feet square. The bearing of this rock, from Cross Hill, is not known; Captain Mears says, it lies in the opening of the second sandy bay from the anchoring place under Cross Hill, the hill bearing from it, by compass S. W. ½ S., appearing over the low land. This bearing does not agree with the description; probably, it should have been S. E. ½ S. Although the anchorage is to leeward, at the N.W. part of the island, there is often a high surf on the shore; caution is therefore requisite, as many ships have had their boats stove by the surf in landing. The summit of the mountain, or centre of the island, is in lat. 7° 58½′ S. and the anchorage of the road in lat. 7° 55′ S. lon. 14° 15½′ W. measured by many ships chronometers from James's Town, St. Helena, allowing the latter to be in lon. 5° 36½′ W. Captain Heywood, made it also, in the above longitude, and in 14° 16′ W. by chronometers, measured from St. Anthony, one of the Cape Verd Islands. Variation 12° 30′ W. in 1806. There is very little rise or fall of tide.†

W. part of the bay supposed rocky near the shore.

Geo. Site.

It has sometimes happened that outward-bound East India ships, after crossing the equator, have found the S.E. trade so far to the eastward, as enabled them to pass in sight of the Island Ascension; this can only happen to ships which cross the equator far eastward of the common track, when the sun is near the southern tropic. The trade wind is then at times E. by S. or E.; and at such times, a S. course may probably be made, by keeping close to the wind in crossing the trade, although ships bound to India, or the Cape of Good Hope, should not adopt this route with a view of shortening the distance; for their principal object is to get quickly through it, into the northerly and westerly winds, where they will soon run down the longitude.

Ships should not be kept close to the wind in crossing the S.E. trade.

Although Ascension is seldom seen by ships bound to India, it is directly in the route of those homeward-bound, for they generally see it in passing; particularly in times of peace, when no danger is apprehended from cruizers.

Island Ascension is in the route of ships homeward-bound.

ST. HELENA, is situated in the southern Atlantic Ocean, in the strength of the S. E. trade, but it is not the island most distant from its nearest continent of any in the known

St. Helena, and of the approach towards it.

* Along the N.W. side of the island, the bank of soundings extends about 2 miles off shore; the bottom said to be rocky, where the depth exceeds 18 or 20 fathoms.

† In places where the shores are lined with a sandy beach, and this bounded by a coral reef or a range of breakers, turtle are generally plentiful; and moonlight nights are the times when the females come on shore in the greatest numbers, to deposit their eggs in the sand. If there is a reef facing the beach, and a rise and fall of tide, they wait for the rising tide to float them over it, and reach the beach an hour or two before high water, that they may have time sufficient to dig large holes in which they deposit their eggs, and return to sea about high water, or before it has fallen much on the reef. If the beach has a gentle acclivity, they dig the pits at a considerable distance from high-water mark, among bushes, small sand hillocks, or in the most convenient secret places near the beach, and then deposit their eggs in them. Some of these holes or pits, are of considerable dimensions, employing the mother turtle upwards of an hour digging them. By those in search of turtle, the beach should not be frequented till near high water, or the time they are supposed to be mostly on shore. In walking along it, silence should be observed, for the smallest noise will alarm them, and those not already on shore, will in such case return to sea.

world, as has been said; for exclusive of the islands in the Pacific Ocean, St. Paul's, Kerguelens, Tristan de Acunha, and others, are more distant from the continents than St. Helena. Before the use of chronometers and lunar observations, navigators were directed, in running for St. Helena, to fall into its parallel 50 or 60 leagues eastward of it, to lie by in the night, and steer west in the day till they made the land: this practice is no longer requisite, for most of the East India ships, homeward-bound, steer now a direct course from the Cape to St. Helena, and make the island day or night: as they generally know the longitude within a few miles of the truth, there can be little danger of missing it, although this is barely possible, the body and leeward part of the island being frequently enveloped in fog clouds, particularly in the night. Should a ship, in such case, fall a little to leeward, she will seldom find any difficulty in working up to the anchorage, unless she sail indifferently upon a wind, for the current seldom runs *strong* to leeward near this island; this, however, may happen, when the trade blows strong with squalls for a few days, which is sometimes experienced about the full and change of the moon; but this lee-current is generally of short continuance. In times of war, when any of the enemies cruizers visit St. Helena, they keep to the eastward and south-eastward of it, at the distance of 15, 20, and 25 leagues; single ships, which sail well, would avoid these cruizers, were they to make the island bearing from N. N. E. to E. or S. E., and afterward make short tacks under the lee of it, till they reach the anchorage. I have seen store ships from England, make the island bearing E. S. E. directly to windward of them, at the distance of 15 or 18 leagues; they sailed indifferently, but reached the anchorage the third day after making the island. There are sometimes calms near it; the Mead was becalmed from the 17th to the 22d May, 1710, within 6 and 8 leagues of the East part of the island, the current setting to the Eastward, prevented her from being driven near it by the swell, and she did not get into the anchorage till the 24th of May.

This Island is about 3 leagues in length, nearly N. E. and S. W., of circular form, about 26 or 27 miles round. The steep rocky cliffs facing the sea, present a sterile and unfavourable appearance to an observer in sailing round the east part of the island, but the chasms or vallies in the interior, and likewise the hills, are fruitful, and clothed with continual verdure, except in very dry seasons, when it is sometimes burnt up for want of moisture. The principal ridge of mountains in the centre of the island is called Diana's Peak, and is about 2200 feet high. Nearer the S. W. part, there is a hill of a conical form, called High Peak, about 50 feet less elevated than the former. On these hills, and on the high grounds, the air is always cool and pleasant; fog clouds frequently cover the Peaked Hills, or being driven from the sea by the trade wind, strike against them, producing gentle showers, which quicken the vegetation and cool the atmosphere on the high grounds, although in the vallies on the leeward side of the island, the sun is often very powerful. There is very little level ground on this island, for it evidently appears to have been forced upwards from the ocean by subterraneous fire; the abrupt ridges and chasms into which it is split, seem to prove this origin, and the effects of amalgamation by fire, are visible from the summits of the hills to the cavities formed by the abrasion of the surge of the sea at the water's edge.

Thunder is seldom heard at St. Helena; lightning has been at times observed in cloudy weather, accompanied by a sultry atmosphere; showers of rain are experienced in all seasons, but in some months more than others. A few years back, a heavy condensed cloud broke on the mountain over Rupert's Valley, deluged it with a torrent of water, and carried a great part of the breast-work and some of the guns into the sea, although this valley is generally dry, there being no run of water in it, except in heavy rains.*

Batteries. At the north-east extremity of the island, there is a pyramidal hill close to the sea, called the Sugar Loaf, with a signal post on it. At the base of this hill there are three batteries,

* Hitherto the inhabitants of this island have escaped that dreadful scourge the small-pox, but the measles were transported by some ship to this place in 1806, which have swept away nearly one-third of the natives.

at a small distance from each other, called Buttermilk, and Banks's upper and lower Batteries; a little to the south-west of these, Rupert's Battery appears, at the bottom of the valley of this name, which is a strong stone wall and battery, mounted with heavy cannon, and Munden's Point divides this valley from James's, or Chapel Valley, where James's Town (the only one on the island) is situated. On Munden's Point there is a fort of the same name, and several guns placed on the heights over it, which command that side of James's Valley. This valley has on the south-west side, a hill elevated nearly 800 feet perpendicular from the sea, called Ladder Hill, with a heavy battery of guns upon it, that commands the south-west entrance to the valley and anchorage. James's Valley is also protected by a wall, and strong line of cannon at its entrance close to the sea. There is also a battery at Sandy Bay, on the south side of the island, where boats might land when the surf is not great; but this and every other part, where there is a possibility of landing, are well secured by batteries or guns placed on the heights over them, and on the summits of the hills there are convenient signal posts all over the island, which communicate by telegraph with each other and with the castle, which add greatly to the natural strength of the Island. When a ship is descried, a gun is fired at the signal post where she is first seen, and this is repeated by the other posts to the castle, which is called an *alarm;* if more ships appear, a gun is fired for each, till five in number, then the signal is made for a fleet; but if more than two sail appear to be steering together for the island, a *general alarm* is beat, and every person immediately takes the station assigned him, and remains under arms till the governor is informed by the boats what ships they are.

Signal Posts.

All ships coming in from the eastward, heave to, before they pass Sugar Loaf Point, and send a boat with an officer to report them. The boat is generally hailed from the battery at Sugar Loaf Point, but she must proceed to James's Town, to give the governor information, before the ship is permitted to pass the first battery at the Sugar Loaf. Ships of war, and all others, must observe this precaution, or the batteries will open upon them and shut them out from the anchorage, which is well defended by the forts and batteries around.

Ships must heave to, & send a boat on shore.

When the boat is perceived returning, a ship may make sail, and pass within a cable's length, or less, of Sugar Loaf Point; she should afterward keep the shore close a board in passing Rupert's Valley, with the head-sails braced well forward, as the gusts of wind from the high land veer several points, and may take the sails aback, if precaution is not taken to prevent it. When past Rupert's Valley, Munden's Point ought also to be kept pretty close to; but care must be taken to avoid the *sunken* rock lying off the fort, about 30 or 40 yards from the point—on which, by borrowing close to the shore, the Lascelles, Fox, and other ships have struck, and were nearly lost: several years past, there has been a small buoy with a red flag placed over this rock. When Munden's Point is passed, James's Valley and Town appears, off which is the proper anchorage. There are no soundings to the eastward of Sugar Loaf Point, till close to the steep cliffs: the bank of soundings begins off Rupert's Valley, and extends along the north-west side of the island to the south-west extremity, called Horse Pasture Point. Lemon Valley is about 2 miles to the south-west of James's Valley, and has a run of good water in it; but it is difficult to water at this place, on account of the surf and rocky shore. Ships do not anchor off this valley, it being distant from the town. Abreast of Rupert's Valley they sometimes anchor, but the ground is not so good as abreast of James's Valley and Ladder Hill; here the bank extends about a mile from the shore, shelving with a steep declivity, when the depth is more than 40 fathoms. It is not prudent to anchor in deep water near the edge of the bank, for the gusts of wind from the Valley are liable to start the anchor when a ship lies far out; should this happen, it would avail nothing to let go another anchor, for the steep declivity of the bank would prevent it from taking hold of the ground. This I have seen several ships experience, and drive off the bank with two anchors down, and all the cables veered out, which occasioned great exertion and fatigue to recover them, and afterwards to work up to the anchorage.

Directions for the anchorage.

A rock must be avoided.

Ships should not anchor far out.

Should a ship anchor in 35 or 40 fathoms water, and the anchor not hold, all the cable may be veered out, to make her ride if possible, till a convenient opportunity offer to warp farther in; but a second anchor should never be resorted to, for if she will not ride fast with one, it ought to be hove up, then sail set, to work her in by short tacks, under lee of the island, till she gain proper anchorage.

Proper anchorage.

Abreast of James's valley, the anchor may be dropped in from 8 to 15 fathoms, with the flag-staff on the castle in James's Town S. S. E. or S. E. by S. The anchorage is equally good off the east corner of Ladder Hill, or abreast of it, with the flag-staff about E. S. E. If a ship anchor in less than 14 fathoms off Ladder Hill, she should be kept at a short scope of cable, till a kedge or stream anchor is laid out in the offing to moor by, for light eddy winds and calms prevail under the hill; she may therefore be liable to swing with her stern in shore and tail on the rocks, if there is much cable out and the anchor under 14 fathoms. In weighing from under the hill, the inner anchor must be first taken up, to prevent tailing on the rocks, which happened to the Melville Castle, and other ships. Ships generally moor with a stream or kedge anchor to the offing, and sometimes with a bower anchor; those in the stream of the valley, seldom swing with their sterns towards it, for a continued breeze, and frequent gusts of wind blow from it to seaward.

When the wind is light, the ships swing with their heads to the eastward and westward alternately at times, this being the effect of a current or sort of tide; but this tide is very weak, and the rise and fall on the shore at full and change of moon, is not more than 2 or 3 feet perpendicular.

James's Town and Valley.

James's Town, is situated in the entrance of the Valley, almost obscured by the impending rocky mountains enclosing it; a row of trees behind the ramparts, and another behind the governor's house, give it a pleasing appearance; the houses are neatly built on each side the principal street, which lies in a direct line up the Valley; higher up, there is a long walk between two rows of trees, having an enclosed square on the left side, and terminated by a garden belonging to the company. There is a run of water in James's Valley, proceeding from a small run on the left-hand side, and from a water-fall, which pours over a concave precipice, about 200 feet perpendicular, into an antient volcanic crater at the head of the valley. Water cresses are often plentiful about the edges of this run of water, and are very serviceable to ships with scorbutic crews.

Roads.

On the right side of the valley, a zigzag road has been cut out with great labour, for ascending Ladder Hill; persons on horseback, and carts, can pass up and down it with safety. This road leads to the governor's country house, and to the south-west parts of the island.

On the left side of the valley, there is a good carriage road, called Side Path, which leads to the interior, and to the eastern parts of the island; other cross roads join these two, and lead to the various plantations. The interior forms a beautiful contrast to the rugged steep cliffs which surround the island; for here, in every valley, small houses and gardens are seen with excellent pasture, and sheep or cattle feeding in different places.

Near the east side of the island, the plantation called Long Wood, contains the greatest quantity of level ground; there is a considerable space, planted with trees here, but a scarcity of water prevailed, until General Beatson, the late governor, brought a supply by artificial means.

Watering Place.

The water that supplies the garrison and shipping, is conveyed by leaden pipes from a spring in the valley, distant more than a mile from the sea. These pipes lead the water to the jetty, where there are two cranes for boats to load with goods or water casks, or receive stores from the shipping. Fire-wood cannot be had in sufficient quantity, furze being the principal fuel of the islanders, and is brought from a great distance by their slaves. Cabbages,

Refreshments.

potatoes, carrots, turnips, and other vegetables and fruits thrive well, but are sold dear, and not in sufficient quantity to supply half of the shipping, which at times anchor here, to procure water and refreshments. All the vegetables are cultivated by the slaves, who are indo-

lently inclined. Were a few industrious farmers or gardeners to use a small plough or two, for planting a few acres with cabbages, turnips, carrots, and potatoes, in some of the valleys where the soil is good, the supply of these useful vegetables would then be sufficient, for all the scorbutic crews of ships which annually visit the island, and produce most beneficial effects; and these articles might be easily conveyed from the interior, in light open carts; whereas at present, what is cultivated is carried by the slaves. The quantity of ground requisite for this purpose would be so small, that it could not be considered as diminishing the pasturage for the cattle, which every where abounds.

Cattle are reared for the use of the company's ships, and supplied to them very sparingly when a fleet arrives, the quantity reared not being adequate to the demand; a greater number it seems cannot be reared, for in very dry seasons, the pasturage has been sometimes destroyed, and numbers of the cattle have died. The troops live mostly on salt provision brought from England, and on fish, with which the shores abound. Poultry is generally very dear, and frequently not to be had. A few hogs may at times be obtained at a high price, which, with a few bushels of potatoes*, are almost the only articles procurable when a fleet has recently departed, or is lying at the island.

During the time a ship or a fleet remains at St. Helena, the passengers are entertained as boarders by the most respectable of the inhabitants, at 30 shillings per day for each person. Until lately, one guinea was the daily charge for each person.

James's Town is in latitude 15° 55′ S. and by mean of 32 sets of ☉ ☽ ✱ I made it in 5° 36½′. W. longitude. Captain Mortlock, by many sets of lunar observations, made it rather less; and Capt. Krusenstern, the Russian circumnavigator, made the anchorage in lat. 15° 54′ 48″ S. lon. 5° 35′ 40″ W. Variation 17½ West in 1812. Geo. site of James's Town.

## *ABSTRACTS, and REMARKS, on PASSAGES to, and from, ST. HELENA.*

### 1st. EASTERN PASSAGE.

EAST-INDIA Company's Ship Britannia, Nov. 11th, 1803, got soundings on the African Coast, in lat. 29° N. lon. 12° W. Here she was several days embarrassed with S. Westerly winds in soundings, and near the coast, till in lat. 27° N. lon. 13° 20′ W. Nov. 15th, lost sight of the land: the weather was unsettled, and a heavy swell prevailed near the coast. She passed between the Island Forteventura, and the main-land, and between Cape Verd, and the islands of that name. Nov. 25th, in lat. 13° N. lon. 20° W. lost N.E.

* Most of the tropical fruits, as well as those found in Europe, thrive well in St. Helena. There is a valley near the south-east part of the island, having a run of water through it, which issues from the east-side of Diana's Peak. An orchard of apple-trees thrives here in a remarkable manner, the branches being loaded to the ground with fruit; and on the same tree, the blossom is seen, and the apple in all the different stages, from its first formation till it is ripe and falling to the ground: some of these, have a flavour equal to good English apples. The soil of this orchard is a rich black loam. On one side of this valley, the soil is 10 or 12 feet deep, sloping down with a considerable declivity; deep ravines are formed in it by the rains, which wash great part of it down into the valley, and although this soil appears good, there is no means used to cultivate the ground in this part, or to prevent the soil from being washed away, which might easily be done.

The Gum tree is the only one in the island that appears indigenous; several of these grow on the hills, and a copse of them is situated at the south-west part of this remarkable island.

General Beatson, the late governor, made great exertions for increasing the agricultural productions of this island, which have been crowned by complete success, and for this, he deserves the gratitude of all oriental navigators.

1803-4, A tedious passage near the African Coast. And afterwards to the westward of St. Helena.

trade; then ensued calms and faint southerly airs. Dec. 28th, in lat. 4° 40′ N. lon. 9° 40′ W. got soundings 43 fathoms on the Coast of Guinea. At noon in 50 fathoms, lat. observed 4° 40′ N. lon. 9° 04′ W. by lunar observations, and 8° 59′ W. by chronometer, Calms and faint breezes continued, with a current to the northward, till January 8th, 1804, in lat. 3° 20′ N. lon. 1° 38′ W.; then a moderate S.W. breeze commenced, which carried her to lat. 1° N. lon. 4° 30′ E., January 12th. From hence, the wind continued between S.W. and S. by E. till in lat. 3° 00′ S. lon. 6° 30′ E. on the 23d; had then a return of calms and faint airs: the current set now, to N. Westward. With a moderate southerly breeze on the 28th, stood to the W.S.W. and westward; it continued till Feb. 1st, in lat. 7° S. lon. 1° W. and veered to S.S.E. and S.E. by S. a moderate trade, which continued till in lat. 24° S. lon. 10° W. February 15th. Had calms and faint airs, till the 27th, in lat. 26° S. lon. 5° 46′ W. then a return of the trade, which enabled her to reach St. Helena, 4th March.

1803. A passage eastward of Cape Verd Islands, and near the S.W. extremity of Africa, to St. Helena.

CITY OF LONDON, left the Isle of Wight, Feb. 1st, 1803, and passed to the westward of Madeira and Canary Islands; then to the eastward of Cape Verd Islands, on the meridian 19½° W. in passing them. Lost the northerly winds Feb. 20th, in lat. 7° 50′ N. lon. 16° 40′ W.; had then faint airs from the northward and westward, till in lat. 5° 20′ N. lon. 11° W. the 25th; light S.W. and southerly airs then commenced, and increased to a moderate breeze when about 26 leagues southward from Cape Palmas, March 5th, which continued till in lat. 3° S. lon. 5° 30′ E., the 16th. Had then S.S.Westerly breezes till the 27th, in lat. 7° S. lon. 2° E. it veered to S.S.Eastward. Made two tacks afterward, and arrived at St. Helena, 3d April.

1803. Two ships bound to C. Good Hope, by a long track of S.S.Westerly winds, made the eastern passage to St. Helena.

SKELTON CASTLE, Union in company, August 10th, 1803, in lat. 16° N. lon. 25½° W. lost N.E. trade, soon after had S.S.Westerly winds. Stood on the starboard tack, and crossed the equator on the meridian of London, Sept. 7th. Light S.S.Westerly winds continued: tacked at times to the westward. On the 24th reached lat. 9° S. lon. 9° E. The S.S.Westerly winds continued till the 28th, in lat. 11° S. lon. 4° E., it veered gradually to S. by E. and S.S.E.; stood on the larboard tack, and arrived Oct. 1st at St. Helena: remained 3 days, and filled up the water.

1802. Minerva separates with Lord Eldon, passes to the eastward of Cape Verd Islands, and arrives at St. Helena ten days before her.

MINERVA, Lord Eldon in company, passed the Isle of Wight, June 18th, 1802; parted company, July 4th, in lat. 22° N. lon. 19° W., having passed to the westward of Palma. The Minerva passed to the eastward of the Cape Verd Islands, keeping in 19° W. longitude at the time. Lost N.E. trade 7th July, in lat. 13° N. lon. 19° 30′ W. Had westerly winds till the 12th, in lat. 7° N. lon. 16° W. it veered to S.S.Westward; stood on the starboard tack, and crossed the equator, 25th July, in lon. 4° E. Continued on this tack with steady breezes, S.W. and S.S.W. till the 30th, in lat. 2° S. lon. 8° E.; had then calms, and variable breezes at southward. Tacked occasionally. In lat. 4° 20′ S. lon. 8° E. Aug. 6th, the wind steady at S.S.W. and S.W. by S., stood S. Eastward till the 9th, in lat. 5° 22′ S. lon. 11° E. Tacked to westward; and on the 15th, in lat. 9° 30′ S. lon. 5° E. it veered to S.S.Eastward. Arrived at St. Helena the 20th.

1802. Lord Eldon makes a part of the Coast of Africa.

LORD ELDON, after parting with the Minerva, July 4th, 1802, passed between St. Anthony and St. Vincent's; the channel appeared about 5 leagues wide, and very safe. She passed to the westward of the other islands, and lost the N.E. trade, July 11th, in lat. 11° 30′ N. lon. 23° W. S.W. and S.S.W. winds then commenced, stood on the starboard tack, and crossed the equator 30th, in lon. 4° 30′ E. Standing on S.Eastward, saw the land Aug. 3d, and thought it the Island Anno Bona, being in its latitude. Bore away to pass to leeward of it, had regular soundings from 13 to 10 fathoms; but the land opening as she stood to the northward, found it to be the main. By observations, of ⊙ ☾ nearly

agreeing with 3 chronometers, this part of the coast of Africa, is in lat. 1° 37′ S. lon. 9° 8′ E. From hence with light S.W. and S.S.W. winds, tacked at times. Aug. 24th, in lat. 9° S. lon. 1° E., it veered gradually to S.S.Eastward; stood on the larboard tack, and arrived at St. Helena 30th.*

1802. A passage eastward of Cape Verd Islands, to St. Helena.

ARNISTON, left the Isle of Wight, Jan. 2d, 1802, and passed to the eastward of the Cape Verd Islands 20th, keeping in 19° W. longitude in passing. In lat. 7° N. lon. 16° W. lost N.E. trade 24th, then calms and variable airs prevailed. On the equator, in lon. 3° W. Feb. 15th, the wind commenced at S.Westward, and continued from S.W. to S., with squalls at times, till in lat. 9° S. lon. 1° E., March 5th, it veered to S.S.Eastward; stood S.W. and arrived at St. Helena 10th. From the equator, this ship tacked frequently, in proceeding southward, and was never more to the eastward than 6° E. longitude.

1800. A tedious passage from England to the River Hooghly, to windward of St. Helena.

EARL SPENCER, with six ships in company, for Bengal, July 28th, 1800, lost N.E. trade, in lat. 16° 30′ N. lon 26° W.; had then light S.W. and S.S.W. breezes and calms. Stood mostly to S.Eastward, and crossed the equator, Aug. 26th, in lon. 2° E. The S.S. Westerly light winds continued, and veered gradually to S. and S.S.E. on Sept. 13th, in lat. 9° 40′ S. lon. 13° E.; but did not get the steady S.Easterly trade wind, till in lat. 13° S. lon. 5° E., Sept. 23d.†

1798. Passage near the African Coast to St. Helena.

GEORGINA, Aug. 18th, 1798, left the Isle of Wight, lost N.E. trade, Sept. 13th, in lat. 13° N. lon. 18° W. On the 22d, saw the Coast of Africa, in lat. 5° N., and stood to the S. Eastward with S.Westerly winds. Oct. 1st, at 8 A.M. the Island St. Thomas bore W. by S. 8 leagues; from hence lay up S. by E. ½ E., 84 miles, to 8 A.M. 2d, and made the lon. 8° 14′ E. by ☉ ☾. Variation 21° W. Oct. 3d, latitude observed, 1° 09′ S. account 1° 10′ S. lon. 9° 07′ E. by ☉ ☾ ✱, the Coast of Africa extending from N.W. by W. to S.E., distant from shore 3 leagues, in 15 fathoms regular soundings. A heavy swell setting towards the land.

Oct. 4th, with the wind variable at westward, lay up S. by W. and S.S.W. along the coast, in regular soundings from 14 to 23 fathoms, off shore 3 or 4 leagues. At noon, latitude observed, 1° 52′ S. lon. 9° 33′ E. by ☉ ☾ distant from the shore 3 leagues. The extremes from N.E. by N. to S.E. ½ E. in 23 fathoms } No current.

S.Westerly winds continued till Oct. 18th, in lat. 8° S. lon. 7° 30′ E., then gradually veered to S. by W. and S.; and shortly after to S. by E. and S.S.E., as she stood to the westward. Arrived at St. Helena 26th.

1799. A passage near the African Coast to St. Helena.

GLATTON, passed Portland, April 3d, 1799, and lost N.E. trade, May 4th, in lat. 6° N. lon. 18° W. Had then light airs and calms; S.S.Westerly breezes followed, and continued at S.W. and S.S.W. June 3d, at noon, Prince's Island, E.N.E. about 10 leagues, and three small islands from E. by N. to E. by S., the nearest, distant about 4 leagues. Latitude observed, 1° 16′ N. lon. 5° 53′ E. by chronometer.

* The Minerva made a more direct course from the Cape Verd Islands to the southward, than the Lord Eldon, and gained on her 10 days in the passage after separating, but the former had the advantage of superior sailing.

† Three of these ships, the Melville Castle, Skelton Castle, and Travers, separated from the others in the night of the 13th of Sept. stood to the W.S.Westward, and arrived at St. Helena 22d; filled up their water, sailed 29th, and arrived in Bengal River Jan. 1st, 1801. The Spencer, Walsingham, Herculean, and Tellicherry, arrived in that river Jan. 2d, very short of water and other necessaries of life; their crews greatly debilitated by scurvy, having touched at no place during a 6 months passage from the Lizard, from which they took a departure, July 2d, 1800.

The other three ships, by procuring a plentiful supply of water at St. Helena, prevented the scurvy; and reached Bengal River one day before their consorts.

June 5th, at noon, extremes of the Island St. Thomas, N.W. ½ N. to S.S.W., off shore about 9 miles. Latitude observed, 00° 20′ N. Saw a ship and 2 brigs at anchor in shore.

On the E. side of Island St. Thomas, the Glatton strikes on a shoal.

June 6th, S.S.Westerly winds, working to windward to pass on the E. side of the island; kept the lead going in standing towards it after dark, had 24 fathoms, tacked, and struck on a shoal in the stays; hove all aback, and got off without damage. Finding a strong westerly current, bore away to leeward of the island. At midnight it bore from S.E. by E. to S.W. by W.: at day-light from S.E. to S.S.W., distant 4 leagues: at noon S. ½ E. to E.S.E. latitude observed, 00° 15′ N. S.S.Westerly winds continued. June 9th, saw at 6 A.M. very low land from E. ½ S. to S.E. by E., stood E.S.E. ½ S. 8 miles, had ground 52 fathoms mud, and tacked. At noon, lat. observed, 00° 33′ S. lon. 8° 40′ E. by chronometer, the land bearing E. seen from mast-head.

June 10th, at sunset, in 27 and 28 fathoms, the southern extreme of the land S. by E.½E. Variable winds and a strong northerly current. June 12th, lat. observed, 00° 04′ S. lon. 8° 15′ E. S.S.Westerly winds; found the current set W. by S. ½ S. 1½ mile per hour. June 13th, at day-light, the land of Cape Lopez from S.S.E. to E.S.E. no ground 40 fathoms. Stood W. 10 miles to noon. Lat. observed, 00° 42′ S. lon. 8° 22′ E. by chronometer. Variation per azimuth, 25° W. The S.S.Westerly winds continued till 27th, in lat. 7° 30′ S. lon. 5° E. they veered to the S. and S.S.E., stood to the S.W., and arrived at St. Helena 5th July.

1796. A passage to St. Helena by working in the open sea, at a considerable distance from the African Coast.

GEORGINA, left the Lizard, Feb. 25th, 1796, and lost N.E. trade, March 18th, in lat. 10° N. lon. 18° W. She had then variable light winds, S.Westerly and northerly currents to the equator, crossed it April 15th, in lon. 3° E. April 16th, a brisk N.N.W. breeze placed her in lat. 1° 25′ S. The S.S.Westerly winds returned, and continued between S.S.W. and S. by E., till the 15th, in lat. 5° 26′ S. lon. 3° E. She tacked to the S.Westward, and on this tack with S.S.E. and S.E. winds, arrived at St. Helena, 2d of May.

1796. A fleet for China, passes to the eastward of St. Helena, and stops there for a supply of water.

CARNATIC and fleet, bound to China, left the Lizard, Aug. 16th, 1796. Lost N.E. trade Sept. 5th, in lat. 11° 00′ N. lon. 23° W. Stood to the S.E. with S.S.Westerly winds, and crossed the equator, Sept. 19th, in lon. 5° W: the same winds continued. On the 2d Oct. at noon, observed in lat. 8° 52′ S. lon. 11° 40′ E. The wind veered to S. by W. Oct. 9th, in lat. 11° S. lon. 8° E. stood to the westward. On the 15th, in lat. 16° 14′ S. lon. 00° 30′ W., they bore away for St. Helena, to fill up their water, and anchored 17th.

1796. The Queen parts with the fleet in N. latitude, and arrives at St. Helena only one day before it

QUEEN, parted with Carnatic and fleet, Sept. 16th, in lat. 2° 30′ N. lon. 9° W. At noon the 25th, lat. observed, 1° 31′ S. lon. 5° 16′ E. by chronometer, the Island Anno Bona bearing from E. by N. to E. by S. distant 4 or 5 leagues. Tacked at this time, there being an appearance of shoal water, and low land projecting out from the island. Had mostly S.Westerly winds from losing the N.E. trade, veering at times to southward; these continued till Oct. 9th, in lat. 8° S. lon. 3° E., then veered to S. by E. and S.S.E. Arrived at St. Helena 16th.

1795. A passage to St. Helena, by working in the open sea.

SWALLOW, left the Lizard Point, Jan. 3d, 1795. Lot N.E. trade 29th, in lat. 10½° N. lon. 18° W. After passing in sight of the Canary Islands, to the westward, had constant N.W. and westerly winds, which obliged her to pass to the eastward of Cape Verd Islands. The S.Westerly winds commenced when she lost the N.E. trade, but frequently inclined to vary several points. Crossed the equator, Feb. 13th, in lon. 8° W. On the 24th, in lat. 4° S. lon. 2° 30′ E. the wind veered to S. by E. From hence, she stood mostly to the S.W. till March 8th, in lat. 18° 30′ S. lon. 8° W., made then several tacks, and arrived 14th at St. Helena.

DUKE OF BUCCLEUGH, left Porto Praya, April 18th, 1794, and lost N.E. trade 20th in lat. 11° 30′ N. lon. 19° W., then had N.Westerly and faint variable airs till May 6th, in lat. 5° 30′ N. saw the African Coast bearing from E. by. S. to N.E. by N. distant 6 or 7 leagues in 55 fathoms green ouze. Had now S.Westerly and southerly light breezes, and saw the land daily till the 10th, in lat. 5° N.: the current set to the northward: with S.Westerly light winds crossed the equator 28th, and saw the Island Anno Bona, 31st. Was baffled near this island several days by southerly winds. June 3d, lat. observed, 1° 19′ S., Anno-Bona from S. 24° E. to S. 50° E. A white rock to the southward, S. 18° E., and a small isle to the northward S. 53° E., distance from the shore 5 or 6 miles. June 4th, at noon, lat. observed, 1° 19′ S. Anna-Bona, W. ½ N. 5 or 6 leagues. Variation 18½° W. In lat. 3° 30′ S. tacked to S.W. with the wind at S. and S. by E., and reached St. Helena 19th, without tacking.

1794. A passage to St. Helena, and near the S.W. extremity of the African Coast, and the Island Anno-Bona.

NANCY, Dec. 30th, 1793, left the Lizard. Passed to the eastward of the Cape Verd Islands, Jan. 18th, 1794. Lost N. E. trade 21st, in lat. 10° 30′ N., and had ground 63 fathoms same time, on the African Coast: had now light N. W. winds. In lat. 6° N. saw the land, in 40 fathoms. Jan. 31st, passed Cape Palmas at 7 miles distance, the wind now veered to S. W. The varation 19½° W. With S. W. winds crossed the equator, Feb. 6th, but at times it veered to westward. In lat. 6° S. Feb. 13th, the wind S. S. W. and S. by W. Tacked to the westward. It veered to S. S. Eastward, in lat. 8° S. on the 17th. Arrived at St. Helena 28th, without tacking.

1793-4. A passage along the S. W. Coast of Africa, to St. Helena.

ROYAL CHARLOTTE, left the start, Dec. 30th, 1792-3, Jan. 28th, passed over the Porgas Bank as placed in the charts; kept the lead going but got no bottom. The rigging is covered with brownish dust, and the clouds come from S. Westward in opposition to the trade wind. Lost N. E. trade, Feb. 1st, in lat. 8° 30′ N. lon. 16° 12′ W. Had now N. Westerly and light variable breezes. At 2 P.M. the 8th, saw the Grain Coast, N. E. ½ N. At 4 P.M. extremes from N. N E. to E., distant 5 leagues in 36 fathoms. At noon, lat. observed, 4° 53′ N. lon. 9° 00′ W. by chronometers, extremes of the coast from N. to E. ½ S., vessels at anchor in Settra Krow Road, N. E. by E., off shore 4 leagues in 40 fathoms. The current has set S. Easterly these last 6 days. From hence steered S. E. 11 miles to 6 P. M. 9th, the coast then from N. W. ¾ W. to E. S. E., a vessel at anchor off a rocky point, with breakers, like the entrance of a river, N. E. ½ E. off shore 4 leagues, in 36 fathoms. The weather is hazy, and the coast very low. At noon, lat. observed, 4° 36′ N. lon. 8° 25′ W. by chronometers, Niffou N. 1° E., Village Little Sesters N. 60° E., off shore 3 leagues in 37 fathoms. Variation 17° W. Being nearly calm in the night, drifted into 17 and 15 fathoms sand, heard the surf on the shore and prepared to anchor; but a land breeze commenced at 3 A. M., stood out S. S. W. and soon deepened.

1792-3. A passage eastward of Cape Verd Islands, and along part of the Coast of Guinea, &c. to St. Helena.

Longitude of Grain Coast.

Feb. 10th, John George, master of the Brig Queen Charlotte, came on board. He is an experienced coaster, and advises falling in with the land about Cape Palmas, and by no means to the westward of it; as the land winds are generally very faint, and should the sea wind prove scant, a ship will receive little benefit from it; there is also a constant indraught which sets towards the shore; which we experienced last night. He says Cape Palmas should not be rounded nearer than 28 fathoms: it is very woody, and from this depth no appearance of a town is perceived on it. The coast from Cape Palmas to Cape Three Points is clear of danger, and the anchorage good. At 6 P. M. the town Grand Sesters, N.N.E. ¾ E., distant about 3 miles in 30 fathoms. The chronometers make it in lon. 8° 11′ W., the lat. is 4° 39′ N. by noon observation.

Grain Coast, Cape Palmas, &c.

Feb. 11th, by observations at noon, make Cape Palmas, in lat. 4° 30′ N. lon. 7° 41′ W. by chronometers. Departed from Cape Palmas, Feb. 12th, had S. Westerly winds and N. Easterly currents till the 16th, the latter abated in strength, and set to the westward of

Longitude of Cape Palmas.

N. for 3 days. On the 21st, with the S. W. winds, passed to the eastward of St. Thomas. The chronometers made the N. end of this island in lon. 6° 37′ E.: had still northerly currents. Feb. 24th, spoke the Margery of Liverpool; Thomas Oliver, master, says Cape Lopez is low, and extends farther out than placed in the charts. It makes in a low point, and is seen before the back land. All the coast is rather low, but clear up to Angola, and may with safety be borrowed on in the night to 15 fathoms. Feb. 25th, in lat. 2° 07′ S. lon. 9° 00′ E. by chronometers, had ground 45 fathoms, and saw the appearance of land. March 3d, in lat. 5° 40′ S. lon. 9° E. Tacked to westward; the S. Westerly winds continued 4 days, veering to southward on the 8th and 9th, in lat. 11° S. On the 11th, in lat. 13° S. it veered to S. by E. and S. S. E. Anchored 13th at St. Helena.

Cape Lopez, and Coast of Africa, to Angola.

1792. A passage by working in the open sea, to St. Helena.

VALENTINE, left the Isle of Wight March 9th, 1792, and passed on the east-side of Palma, and to the westward of Ferro the 20th. On the 25th and 26th kept in lon. 19° to 19½° W. in passing to the eastward of Cape Verd Islands. Lost the northerly winds the 31st, in lat. 7° 30′ N. lon. 14½° W.; had then calms and light S. Westerly breezes. Crossed the equator April 25th, in lon. 1° 30′ E. From lat. 4° N. to 2° N. the current set eastward. From the equator the wind was mostly from S. S. W. and S. by W. veering to S. by E. and S. S. E. at times. Worked to the southward till May 3d, in lat. 4° S. lon. 5° 30′ E. then with a S. S. E. wind stood to S. Westward, and arrived 11th at St. Helena.

1791-2. A passage to eastward of Cape Verd Islands and along part of the Grain Coast to St. Helena.

OCEAN, Dec. 20th, 1791, left the Start Point: Jan. 11th, lost N. E. trade, in lat. 8° 40′ N. lon. 17° W. From hence had light variable winds all round, and calms, with S. Easterly currents at times, and during two nights much thunder and lightning. On the 20th, saw the land; at noon the extremes from Cape Mensurado N. 58° E. to N. 81° E. distance off the Cape about 9 leagues. No ground 120 fathoms. Lat. observed, 6° 07′ N. lon. 11° 00′ W. by chronometer, and 10° 50′ W. by ☉ ☾, which mean will place the cape in lon. 10 35′ W., and in lat. about 6° 27′ N. from its bearing at noon. Saw yesterday several drifts and sea-weed, but no birds of any kind. Jan. 21st, the mean of observations ☉ ☾ and chronometer this day, makes Cape Mensurado in lon. 10° 36′ W. At midnight had ground 47 to 50 fathoms. At noon, the land in sight from the top E. N. E. lat. observed, 5° 24′ N. lon. 10° 00′ W., by mean ☉ ☾ and chronometer. No ground 90 fathoms. Steered S. S. E. ¼ E. 46 miles to 4 A. M., and had ground 48 fathoms. From the course steered, did not expect to be so near land. For some days past, the wind has been mostly westerly and N. W. it now inclines from S. W. Jan. 24th, mostly calm, but at 10 A. M. a tornado squall blew strong for a short time, with thunder, lightning, and rain. Faint S. Westerly breezes, and generally N. E. currents prevailed, till in lat. 2° N. lon. 5° W. 30th, the latter began to set N. Westward, and light breezes continued mostly from S. S. W. to S. Crossed the equator, Feb. 9th, in lon. 1° E. and had now a weak current to westward. In lat. 5° 40′ S. lon. 6° 30′ E. the 18th, the wind veered to S. and S. by E., tacked to S. Westward, and with a S. S. E. trade, most of the way, arrived 28th at St. Helena.

## 2d WESTERN PASSAGE.

1795. A passage to St. Helena, without going far to the westward or southward.

ARNISTON and fleet, lost N. E. trade April 27th, 1795, in lat. 4° N. lon. 18° W. had S. W. and S. S. W. winds till May 5th, in lat. 1° S. lon. 15° W., and got the S. E. trade next day. She parted with the fleet, and was never more westward than lon. 25° W., nor to the southward of lat. 25° S., and arrived June 2d, at St. Helena.

1794. Another passage with

DART, Sept. 26, 1794, got westerly and S. W. winds in lat. 9° N. lon. 21° W.; these continued till Oct. 6th, in lat. 1° N. lon. 13° W. then veered to S. S. E., stood to the

S. Westward, In lat. 20° S. lon. 16° W. tacked to eastward on the 21st; in lat. 14° S. lon. 10° W. tacked to southward, in lat. 17° S. lon. 10° 30′ W. tacked to eastward the 28th; afterward, made various tacks between 15° and 19° S. lat. and reached St. Helena Nov. 8th, having never been more westward than 16° 50′ west longitude during the passage from the equator to the island. out going far west, nor so far south as the tropic of Capricorn.

MARQUIS OF ELY, left the Isle of Wight Feb. 13th, 1802, lost N. E. trade March 12th, in lat. 4° N. lon. 22° W., and got S. E. trade 21st, in lat. 2° S. lon. 24° W. In standing across the trade she did not get to the westward of 29° W. lon. On the 4th April, her most southerly position was in lat. 29° S. lon. 21° W. She arrived the 19th, at St. Helena. 1802. A passage by the route most frequented to St. Helena.

PRINCESS MARY, left the Lizard Sept. 12th, 1801 with a fleet, and lost the N. E. trade October 9th, in lat. 21° N. lon. 26° W.; separated from the fleet and got the S. E. trade 30th, in lat. 1° S. lon. 19° W.; lost S. E. trade Nov. 9th, in lat. 18° S. lon. 25° W., had then light variable easterly winds till in lat. 31° S. lon. 11° W., on the 21st, then north-east and northerly winds. In lat. 32° S. lon. 9° W. on the 25th, stood northward, and arrived Dec. 2d, at St. Helena. 1801. A passage by going far southward.

HUGH INGLIS, with a fleet, left the Start, May 4th, 1800; lost north-east trade June 1st, in lat. 10° N. lon. 25° W. and got the south-east trade 16th, in lat. 2 N. lon. 28° W. Separated with the fleet, went as far as lat. 33° S. and arrived August 14th, at St. Helena. 1800. A tedious passage far southward to St. Helena.

ARNISTON, left Portland Jan. 8th, 1800, lost north-east trade Feb. 13th, in lat. 6 N. lon. 21° W. and got south-east trade 27th, in lat. 1° N. lon. 21° W. She went to lat. 29° S. and arrived April 4th, at St. Helena. 1800. A passage by the regular track to St. Helena.

PRINCESS MARY, left Portland Nov. 19th, 1799, lost north-east trade Dec. 13th, in lat. 6° N. lon. 21° 30′ W., and got south-east trade 17th, in lat. 4° N. lon. 22° W. Between 27° and 31° S. lat. had calms and light winds, did not exceed lat. 31° S., and arrived Jan. 29th, 1800, at St. Helena. 1799-1100. A passage far southward to St. Helena.

LORD HAWKESBURY, left Portland, April 25th, 1799, lost north-east trade May 19th, in lat. 7° 30′ N. lon. 18° W.; on the 30th was in lat. 3° N. lon. 5° 30′ W., and got south-east trade June 9th, on the equator, in lon. 14° W.; July 25th, in lat. 31° 50′ S. lon. 10° W., had calms and light airs several days, then stood to the north-eastward with variable breezes till in the south-east trade, and arrived August 10th at St. Helena. 1799. A tedious passage far southward to St. Helena.

TELLICHERRY, June 11th, 1798, left the Lizard; lost north-east trade 30th, in lat. 12° N. lon. 26° W., and got south-east trade July 10th, in lat. 3° N. lon. 24° W.; on August 8th, her most southerly position was lat. 30° S. lon. 22° W., and arrived 18th at St. Helena. 1798. A passage nearly in the most frequented route to St. Helena.

CANTON, left the Lizard April 15th, 1796; lost north-east trade May 7th, in lat. 15° N. lon. 19° 30′ W., having passed to the eastward of Cape Verd Islands; got south-east trade 23d, in lat. 0° 30′ S. lon. 24° W. For three days previous to crossing the equator had strong westerly currents; on it they changed, and set strong to north-east three days. In lat. 25° S. lon. 21° W. June 11th, with westerly winds steered east; in lat. 23° S. lon. 11° W. the 15th, got easterly winds, then variable at north-east and northward till in lat. 21° S. lon. 7° W. on the 20th, the south-east trade returned, and arrived the 23d at St. Helena. 1796. A passage to the eastward of Cape Verd Islands, and by the route beyond the southern limit of S. E. trade to St. Helena.

1815. A quick passage by the western route to St. Helena.

CERES, bound to St. Helena, crossed the equator the 7th May 1815, in lon. 20° 20′ W. (having lost N. E. trade in lat. 5° N. long. 19° W., and got the S. E. trade in lat. 0° 40′ S.) She lay up well to the southward, and went not farther west than lon. 25°, when in lat. 19° 20′ S. on the 15th. Here the winds veered to East and N. E. with which she stood to S. E. and E. S. E., the winds drawing to North, N. W., and West, as she ran to the eastward. On the 23d, she was in lat. 22° 15′ S. lon. 10° W., and was never farther south; from hence she steered E. N. E. to lon. 7½° W. with W. N. W. and W. winds, then steered N. N. E.; got the S. E. trade wind again in lat. 19° S. nearly on the meridian of St. Helena, where she arrived on the 28th, having 21 days passage from the equator.

1815. Western passage to St. Helena, longer than the above.

HEREFORDSHIRE, bound to St. Helena, crossed the equator the same day as the Ceres, on the 7th May, 1815, in lon. 22° 7′ W., and on the 15th was in lat. 17° 15′ S. lon. 27° 25′ W., being her farthest westerly position; with N. East and Northerly and S. S. E. winds, she steered first S. E., then East, nearly on the parallel of 20° S. lat. till in lon. 15° W. on the 24th. Here she got a return of the S. E. trade wind, and steered to the southward and S. S. E. till in lat. 28° 30′ S. lon. 11° W. on the 1st June, from whence she steered E. N. E. to lon. 7½° W. with northerly winds, then N. N. E., and got the S. E. trade again in lat. 26° S. and arrived at St. Helena 8th, having a passage of 32 days from the equator, or 11 days longer than the Ceres.

## 3d. COMPARATIVE VIEW OF PASSAGES TO AND FROM ST. HELENA.

The winter months is the most favorable season for the eastern route to St. Helena.

BY these examples of ships which have gone by the eastern and western routes to St. Helena, combined with other information, it appears that the eastern route may be adopted in November, December, January, February, and March. If a ship bound to St. Helena, cross the equator in any of these months, and find the winds incline from S. Westward, by standing to the S. E. across the Gulph of Guinea close on a wind, and afterward tacking as it veers to the east or west of S. she will most probably reach St. Helena in less time than if she had proceeded by the western route. From the time of losing the N. E. trade, 40 or 44 days to St. Helena may be considered a medium passage by the eastern route in these months, although the Swallow made it in 31 days. From the southern limit of the N. E. trade, the passage by the western route is seldom accomplished in less than 40 days. By this route, 43 days seems about the medium passage; and during any month of the year it may be made in this time, from the situation mentioned. The Arniston made it in 36 days in May, &c. but she did not go more south than 25° S. latitude, and the Ceres made it in 21 days from the equator, not going beyond lat. 22° 15′ S. When the sun has great north declination, the eastern route seems precarious; the other seems most certain at all times. A ship that sails indifferently close hauled or in light winds, should not attempt the eastern route in this season; but one that slides fast through the water in faint breezes, and holds a good wind, may probably proceed by the eastern route in any season with safety. The Britannia's passage of 95 days in the favorable season, from the southern limit of the N. E. trade to St. Helena, by the eastern route, is a singular case. It has been the practice with ships going the western route, to run far south, sometimes to lat. 32° and 33° S.; this can seldom be requisite, as it lengthens the passage; the ships which have not proceeded so far south, have generally made the best passages to St. Helena*.

The sun in northern hemisphere, the eastern route is precarious.

Improvements in science render ancient precepts inexpedient.

From St. Helena to England.

From St. Helena to England, the passage with a fleet is generally about two months, or seven weeks in a single ship that sails well.

* In these times of scientific improvements, it is not necessary to adhere implicitly to instructions given half a century since; for coppered ships which sail well upon a wind, with good chronometers and other instruments on board, may often accelerate their voyage by deviating from ancient precepts.

From this island to the Cape of Good Hope, the passage is about a month. The Georgina was 26 days making it in November, 1798; in February, 1799, she was 28 days; and in April and May, 32 days completing the same passage. To Cape Good Hope.

From Cape Good Hope to St. Helena, the passage may be estimated at 13 days; it is frequently performed in 10, and has been accomplished in 8 or 9 days. From hence to St. Helena.

The Georgina, departed from St. Helena, Sept. 18th, 1806, and carried the trade and N. Easterly winds to lat. 30° S. lon. 49° W. On the 13th Oct. she entered the River Plate, and grounded on the banks nearly in sight of Buenos Ayres on the 19th, but soon got off without damage, the bank being soft mud where she grounded. She got clear of the River Plate on the 21st Oct. and arrived at Table Bay, Cape Good Hope, Nov. 24th, and gave intelligence of the re-capture of Buenos Ayres. From St. Helena to River Plate. From hence to C. Good Hope.

GEORGINA, left St. Helena, May 22nd, 1805. In lat. 27° S. and lon. 6° W. the 30th, got the wind at northward and N. E. three days, and then steered E. by S. June 2nd. in lat. 26° S. lon. 3° E. it veered to W. S. W. and S. W., and continued till in lat. 20° S. lon. 9° E. the 6th: it then veered to the S. Eastward. June 9th, at 7 P. M. heard the surf, and saw breakers on the lee-beam, hauled off N. E.; shortly after saw the land bearing S. S. E. and sounded in 38 fathoms, sand. At day-light the land from S. ½ E. to E. S. E., off shore 5 leagues, in 52 fathoms. At noon the high land from N. E. by E. to S. S. W., a remarkable hill like a turk's cap, which we suppose to be Mount Negro E. S. E., off shore 7 or 8 miles, in 45 fathoms, sand, coral, and shells. Lat. observed 15° 30′ S., lon. by ☉ ☽ 12° 28′ E. June 10th, steered along shore mostly N. E. and N. E. by E. with light westerly winds and hazy weather. At sun-set the coast from S. W. by S. to N. by E., off shore 6 or 7 miles; shortly after had 19 fathoms mud, steering N. E. by E. At 10 A. M. Tyger's Bay, S. S. E. ½ E. and a large bay open S. by E. off shore 7 or 8 miles. St. Helena to Benguela.

June 11th, light winds from S. W. to W. and cloudy weather; at sun-set a bluff point S. E. by S.; a remarkable high round hill S. by E., off shore about 7 miles; at noon, lat. observed 13° 07′ S., account 13° 8′ S. June 12th, light westerly winds and fine weather, hove to, in the night; at 8 A. M. St. Philip's Bonnet E. by S. ½ S. 3 or 4 leagues; at noon, lat. observed 12° 33′ S., St. Philip's Point S. E. ¼ E. 2 leagues, the extremes of the land from E. N. E. to W. S. W. ½ S., off shore about 4 miles; P. M. steered S. E. by E. into the bay; at 3 the master attendant came on board, and at 4 anchored and moored in Benguela Bay in 10 fathoms, with the best bower to seaward.

The Georgina received 84 bullocks, sailed June 21st, and had light winds from westward near the land; stood to the westward on the 22d, with a fresh breeze at S. W.; it continued at S. W. by S. and S. S. W. till in lat. 13° S. on the 26th, veered then to S. by W. and to S. on the following day. June 28th, in lat. 15° 30′ S. lon. 2° 30′ W. it veered to S. by E.; arrived the 29th at St. Helena. Return to St. Helena.

Georgina, Sept. 15th, 1805, left St. Helena. In lat. 21° S. with southerly and light variable winds the 18th, stood E. N. Eastward; in lat. 12° S. lon. 7° E. on the 29th, they veered to S. and S. S. W. moderate and light breezes, which continued till she arrived, Oct. 4th, at Benguela. St. Helena to Benguela.

Sailed from hence the 22d, had the wind mostly at W. and W. S. W. (often variable) till in lat. 10° 30′ S: lon. 7° 30′ E. the 26th; it now veered to S. W., next day to S. S. W. and S. fresh breezes and squally. From the 26th to the 30th it blew strong from S. by W. to S. by E.; afterward it continued steady at S. by E., arrived at St. Helena Nov. 1st, having experienced a confused head sea great part of the passage. Return to St. Helena.

# *WINDS and CURRENTS in the GULF of GUINEA: COASTS, and adjacent ISLANDS, and from thence to the SOUTHWARD.*

Prevailing winds.

ALONG the Coast of Sierra Leone and the Grain Coast, to Cape Palmas, N. W. and N. N. W. winds mostly prevail. From this Cape, across the Gulf of Guinea to Cape Lopez, they are found to prevail in general from S. W. and southward. The currents are variable on the Grain Coast; in the S. W. monsoon when the sun is far to the northward they frequently run to the N. W. but at other times often to the S. E. They set mostly between north and east across the Gulf, from Cape Palmas to Cape Lopez, particularly from the Coast to lat. 2° N. From lat. 2° N. across the equator to lat. 1° or 2° S., the current frequently sets strong to the westward; this is mostly experienced about the equator, and a little to the northward of it, when the sun has great north declination.

Currents near the coast.

Near equator.

Although in the Gulf of Guinea, the winds blow generally from southward and S. S. W. towards the Coast, in S. latitude they are observed near the land to take a more westerly direction; often prevailing from S. W. and W. S. W. along the African coast between Cape Lopez and Benguela. As the distance is increased from the coast, the winds veer in proportion more southerly; it has been said, that the boundary of the winds which blow from south to S. W. along the west coast of Africa to lat. 28° S. is an imaginary line drawn from Cape Good Hope to Cape Palmas. It may be observed, that the winds are found in general, to draw to the S. by E. or S. S. E. considerably to the eastward of this imaginary line; some ships however have been perplexed with the winds from S. and S. by W. between 7° and 15° south lat. until several degrees to the westward of this imaginary line; although this seldom happens.

Winds from Cape Lopez to Benguela and at a great distance from the coast.

From Cape Lopez to Sierra Leon a dry parching easterly wind sometimes blows along the Coast of Guinea, in December, January, and February, and is called the Harmattan by the Fantees, a nation on the Gold Coast. In these months, the Harmattan may come at any period of the moon, and it continues sometimes only 1 or 2 days, sometimes 5 or 6, and it has been known to last 15 or 16 days. There are generally 3 or 4 returns of it every season, and it blows moderately. On the Coast of Sierra Leon, its direction is from E. S. E., and the same farther northward. On the Gold Coast from N. E., and at Cape Lopez and the River Gabon from N. N. E. The Harmattan is accompanied by a dark haze; and it is a cold parching wind, destructive to vegetation, but purifies the atmosphere from infectious exhalations.

Harmattan a peculiar wind.

The rains set in on the Coast of Guinea in May, and continue till October; as they do also on the west coasts of both peninsulas in India, and others situated to the northward of the equator, which have the ocean open to the west or S. Westward. Preceding, and subsequent to the rainy season, on the Coast of Guinea, tornadoes may be expected; these are hard squalls from East and E. S. Eastward, accompanied with thunder, lightning, and much rain. In the Gulf of Guinea, faint breezes and calms are also frequent at various seasons of the year.

Rains on the coast of Guinea.

Tornadoes.

Calms, &c.

About Cape Lopez, and from thence along the coast to the southward, the current often sets to the northward; at other times it is variable, with strong ripplings, near the rivers in the rainy season; when the freshes from these rivers, added to a body of water being driven toward the Coast by the S. W. wind, is turned backward and forms a westerly current. In the dry season, there is frequently no current.

Current variable near the coast.

The rainy season to the southward of the equator, on the Coast of Loango, Congo, and Angola, is the opposite to that on the Coast of Guinea; the sun in the northern hemisphere bringing the rainy season on the latter coast, at which time it is the dry season of the former; the southern sun producing the rains to the southward of the equator. Rainy season in south latitude.

In the fair season, on the coasts which embrace the Gulf of Guinea, land and sea breezes prevail; but the winds blow almost constantly from the sea during the rains. Land and sea breezes.

HEADLANDS OR ISLANDS, from Cape Verd around the coast of Guinea, are sometimes seen by East India ships, proceeding by the eastern route to St. Helena, the chief of which appear to be situated by lunar observations and chronometers as follows. Headlands, &c. on the coast of Guinea.

Geo. site of Capes Verd

CAPE VERD, in lat. 14° 50′ N. lon. 17° 35′ W.

CAPE ROXO, is in lat. 12° 12′ N. lon. 16° 50′ W.; and 18 leagues to the S. S. Eastward, lies the Bissagos Islands encircled by shoals, with other shoals between them and Cape Roxo. and Roxo. Bissagos Islands.

ST. ANN'S SHOALS, front the coast to the S. W. of Sierra Leon at a great distance, and their western extremity in lat. 7° 34′ N. lon. 13° 28′ W. bears nearly south from the Isles de Loss. St. Ann's Shoals,

CAPE ST. ANNE, the western extreme of Sherbro Island, is situated in lat. 7° 5′ N. lon. 12° 20′ W., and a group called Turtle Isles project from it to the westward, uniting with the southern extremity of the foregoing shoals. and Cape.

CAPE MENSURADO, in lat. 6° 25′ N. lon. 10° 30′ W. is high; and from Cape Verd to this part of the coast of Guinea, soundings extend out to a considerable distance from the land. Capes Mensurado,

CAPE PALMAS, in lat. 4° 30′ N. lon. 7° 41′ W. is rather low, like most parts of the coast of Guinea, and it should not be rounded under 28 fathoms. Variation 17° W. in 1793. Palmas,

CAPE THREE POINTS, is in lat. 4° 31′ N. lon. 2° 41′ W.; and Cape St. Paul, the western extremity of the Bight of Benin, in lat. 5° 29′ N. lon. 0° 50′ E. Three Points, St. Paul,

CAPE FORMOSA, in lat. 4° 5′ N. lon. 5° 5′ E. is very low, forming the eastern extremity of the Bight of Benin, and from hence the coast extends about 53 leagues nearly east to the north of Calabar River, all low land, where it turns round to the southward, forming the Bight of Biafra, into which flow several large rivers. and Formoso.

ISLAND FERNANDO PO, situated in the middle of the Bight of Biafra, is about 13 or 14 leagues west of the mouth of the great River Camaroons, the body of it being in lat. 3° 14′ N. lon. 7° 48′ E., and it is about 20 leagues in circuit, inhabited by negroes, well watered, abounding in sugar-cane and fruits. Fernando Po.

PRINCE'S ISLAND, in lat. 1° 30′ N. lon. 7° 3′ E., is about 27 leagues to the W.N.W. of Cape St. John, and about the same distance to the S. S. W. of Fernando Po. It is high, with a village and harbour on the east side, where bullocks, hogs, goats, and water may be procured. There are some rocks and islets adjoining, particularly those called the Three Brothers, about 4 or 5 leagues to the S. W., and that called Caroco, about 2 leagues to the southward. Prince's Island. Three Brothers, and Caroco.

St. Thomas. ISLAND ST. THOMAS, about 40 leagues west of Gabon River, is about 26 leagues in circuit, of a round form, it north extremity being in lat. 0° 30′ N. lon. 6° 37′ E., and the islets off its south extremity lie on the equator. This island belongs to the Portuguese, and it affords some articles of refreshment for ships that touch at the bays on the eastern part, the chief of which is Anna de Chaves; but the shore to the northward of this bay being rocky and steep, it must have a wide birth in passing.

Shoal off the anchoring bay of St. Thomas. The Chesterfield, working toward the road of St. Thomas, on the 18th of September 1781, with the Blandford and Tartar in company, got no ground at 50 and 60 fathoms, until the rocks were seen along side, had then 16 fathoms and the ship grounded in stays. When aground, the fort bore S. W. by S., a small island off the N. W. point of the road N. W., the eastern extreme S. by W., off shore about 4 or 5 miles, and off the small island nearly 3 miles. Hove the ship off the shoal with the stream anchor, and the assistance of a schooner: afterward, steered for the road, keeping the fort from west to W. by S.; had from no ground 60 to 16 fathoms, and shortly after 6 fathoms, shells, sand, and coral, then anchored with the small island bearing N. by W. ½ W., south end of St. Thomas S. ½ W., the northernmost point N. W. ½ W., and the fort W. S. W., off shore about 2 miles.

Anchorage. The Tartar anchored in 5½ fathoms, with the fort S. W. by W. distant 1 mile, and the Blandford much farther out; by observation, they made the south end of the island to lie on the equator.

There are two large bays fit for large ships, with a small bay between them, and the principal one where the fort is, lies at the S. E. part of the island: in this bay, the depths are from 8½ to 4 fathoms close in shore, the bottom clear fine sand. The other large one, called Man of War Bay, has a few huts, with good anchoring ground, and is situated at the N. W. part of the island.

and sailing directions. To approach the bay where the fort is situated, the best way is to come round by the south end of the island, because the current sets mostly to the northward, and the winds prevail from southward. The shore to the southward of the fort can be approached with greater safety than to the northward, but not under the distance of 1½ mile until the fort is brought to bear W. by N.

The lead is no guide in turning in from the northward, because from no ground, a ship may have 12 fathoms, and be aground before another cast of the lead can be hove.*

Anno-Bona. ANNO-BONA, in lat. 1° 30′ S. lon. 5° 48′ E. (the body) distant 56 leagues westward from Cape Lopez, is 7 or 8 leagues in circuit, rising in 2 high hills, the summits of which are often clouded, and on one of them is said to be a lake of pure water. This island is refreshed by constant breezes, which render it healthy; it abounds with tropical fruits, domestic animals, poultry, and produces excellent cotton; the inhabitants are negroes, converted to the catholic faith by the Portuguese. The best anchorage is at the N. E. part of the island, where there is a village: on the west side, the appearance of shoal water was seen by the Queen in passing, projecting from some low land. Variation 19° W. in 1794.

Cape Lopez. CAPE LOPEZ GONZALVES, in lat. 1° 11′ S. lon. 8° 40′ E., is low and woody, and with the whole of the coast, which is generally low to Angola, may be approached to 15 or 20 fathoms.

Lango Bay. LOANGO BAY, in lat. 4° 38′ S. lon. 11° 27′ E. is surrounded by red cliffs; and from the southern extremity called Indian Point, a reef projects nearly half way across the bay,

* The Glatton struck on a shoal here, as will be seen under that ship's name among the descriptions of eastern passages to St. Helena.

with good anchorage within it in 4 fathoms ¾ mile from the shore; but the surf prevents landing, except in the canoes of the country.

CONGO RIVER'S MOUTH, in lat. about 6° 0′ S. is wide, with rapid freshes running out of it to the N. Westward, which discolour the sea at a considerable distance, and carry floating islands of trees a great way out to sea, but being seldom visited by ships, this river is not well known.* Congo River.

ST. PAUL DE LOANDO, in lat. about 9° 0′ S. situated on the south shore of Bengo Bay, and on an island 10 leagues long, which with a peninsula of the main, forms a good port: this is the chief settlement of the Portuguese on the coast of Angola. St. Paul de Loando.

BENGUELA BAY, in lat. 12° 39′ S. lon. 13° 29 E. or 19° 5¼′ East of James's Town, St. Helena, by Capt. Heywood's chronometers, in H. M. ship Nereus, is called also the Bay of St. Antonio, St. Philip of Benguela, being the chief Portuguese settlement on this coast. Benguela Bay; Geo. site and description.

The Nereus, on the 29th Jan. 1811, anchored in 10 fathoms, with the Flagstaff just touching the East side of the church, bearing S. 54° E. distant 1¼ mile.

The Georgina 12th June 1805, moored in 10 fathoms, with the Northern extreme of the land N. by W. ½ W., St. Philip's Bonnet W. N. W. ¼ W., the flag-staff of the Fort S. E. ¼ E., off shore 1½ mile, and found 2 ships and 7 brigs in the Road, under Portuguese colours.

This bay is formed on the S. W. side by a peninsula, the extremity of which is called Punta de Chapeo, from a single clump of trees on it, the shore on each side being barren; and this clump is called St. Philips Bonnet or Hat. The extreme points of the bay, extend from each other about 7 or 8 miles; and from a transit line joining these points, the bay is about 2½ miles in depth to the beach: upon that transit line, and half way between St. Philips Bonnet and the low sandy point of the bay, the depth of water is 17 fathoms, from hence, decreasing gradually to 6 fathoms within a mile of the shore.

The surrounding country abounds with excellent fruit and vegetables, but the water is not of the best quality, and procured with some difficulty, by bailing it out of wells of considerable depth, distant about 300 yards from the beach. The Nereus was well supplied with bullocks, sheep, goats, hogs, fruit and vegetables; and plenty of fine fish were caught by the seine in the bay. Variation 20° W. in 1806.

CAPE NEGRO, in lat. 16° 0′ S. lon. 11° 54′ E. by chronometers, measured from Benguela, is the westernmost land of this part of the coast, of a level, brown, sandy appearance, discernible at 7 leagues distance, were it not for the atmosphere being generally hazy; but in passing at 3 leagues distance, in regular depths of 12 to 15 fathoms, no projecting headland was seen in the Nereus. Geo. site of Cape Negro.

Between Benguela Bay and Cape Negro, there are several bays near the former; and Village Bay, Turtle Bay, and Little Fish Bay, nearest the Cape. Village Bay is in lat. 14° 10′ S. where the Abington and Josiah anchored in 20 fathoms, in Oct. 1703, and got plenty of wood, and water from a pool near the shore. Bays.

PORT ALEXANDER, in lat. 15° 52′ S. is formed by the peninsula of Cape Negro, which terminates in a curve to N. E. ward, bounding the entrance on the west side. This Port has from 12 to 20 fathoms water in it, and seems to be well sheltered from all winds, by the sketch of it made in H. M. sloop Star, in 1796. Port Alexander.

* The freshes run constantly out of the Congo or Zahir River all the year, sometimes at the rate of 6 and 7 miles an hour, there being no tides; and as there is upward of 100 fathoms water in the middle of the entrance, the difficulty of navigating it is great, and its extent and source at present are enveloped from the knowledge of Europeans. But it is to be hoped, our knowledge of this great River will soon be enlarged, by the exertions and talents of the officers, lately sent by Government to explore it.

Fish Bay. FISH BAY, in lat. 16° 30′ S. formed by a narrow sandy peninsula on the West side, called Tiger Peninsula, has even soundings from 12 to 6 fathoms, being a spacious and safe harbour. But as there is said to be no fresh water on the coast, from lat. 16° to 31° S., these bays are seldom visited, except by Whalers.

Walvish Bay. WALVISH BAY, in lat. 22° 54′ S. lon. 14° 36′ E. is spacious and well sheltered, except from northerly winds, which seldom blow here; and it is frequented by Whalers. Soundings extend a considerable way off the coast, from hence to Cape Negro.

Sandwich Harbour and Spencer's Bay. SANDWICH HARBOUR, in lat. 23° 30′ S. is small, with only 3 fathoms water in it. SPENCER'S BAY, in lat. 25° 46′ S. has 5 and 6 fathoms water, but although sheltered by Mercury Island on the west side of the entrance, it is rather exposed to northerly winds.

Angra Pequena. ANGRA PEQUENA (Little Bay) or Santa Cruz, in lat. 26° 37′ S. has 3½, 4, and 5 fathoms water; and the best and deepest anchorage, is on the east side of the Isles at its entrance, in 4 or 4½ fathoms, sheltered from all winds.

Geo. site of Elizabeth Bay. ELIZABETH BAY, in lat. 27° 0′ S. lon. 15° 37′ E. is formed by Possession Island, which lies about 3 miles from the land, having a channel between them of 8, 9, and 10 fathoms. A ship may anchor under the Island, and be sheltered from West to S. W. Var. 22° 50′ W. in 1793. This place is the boundary between the Kaffer and Hottentot Countries.

Geo. site of Cape Voltas. CAPE VOLTAS, in lat. about 28° 42′ S. lon. 16° 20′ E. is the south point of the Orange or Giarep River; an extensive shoal projects from it, and to the south adjoining to the Coast, there are several Islets.

To the southward of Cape Voltas, soundings seem to extend far out, for the Hanover from India, on the 2d June 1715, in lat. 29° S. perceiving the water discoloured, sounded in 95 fathoms fine sand; and at noon had 115 fathoms when the observed lat. was 29° 6′ S. and after steering N. W. 8 miles, the land was seen at 4 P. M. bearing N. E. by E. distant supposed about 15 leagues.

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## *WINDS and CURRENTS, near the EQUATOR, and the BRAZIL COAST.*

### AND OF SHIPS WHICH HAVE BEEN CARRIED NEAR THE LATTER.

Periodical winds and currents on Brazil coast. IT has been observed, that on the Brazil coast, the winds are periodical, blowing from S. S. E. and S. E. from March to September, the current then running to the northward; and from September to March, the wind blowing from N. E. and E. N. E. with a southerly current prevailing during the same period: vessels are therefore directed, to make the land to windward of the port they intend to touch at, according to the periodical winds blowing along the coast, which generally govern the currents.

When the sun is in the northern hemisphere, the winds on the Brazil coast, certainly incline more from south-eastward than in the opposite season, when that luminary is south of the equator, for at this time they prevail at eastward.

It appears, that in any season of the year, if the coast be not made to the north of Cape St. Augustine, there is no difficulty in getting to the southward; for ships which have made the coast in lat. 7° and 8° S. which is considerably to the northward of this cape, even in the unfavourable season, found little difficulty in getting to the southward after making a few tacks, and experienced little or no current to the northward. But from March to October, in an *indifferent sailing* ship, it would be imprudent to make the land to the north of Cape Augustine, if it can be avoided. To the northward of Cape Ledo, or near Cape Roque, it certainly should not be made, on account of S. E. winds and W. N. W. currents, liable to sweep a ship round Cape Roque to the westward, which has frequently been experienced.* The coast should not be made far north.

Outward-bound ships, which touch at St. Salvador in every month of the year, after leaving this place, proceed to the southward without difficulty, for the winds mostly draw to E. S. E. in lat. 13° or 14° S. even in the most unfavourable season for sailing to the southward, and they are frequently variable near the coast, with land breezes at times. About Cape Frio, the prevailing winds are north-easterly all the year, though often variable, and sea and land breezes, are mostly experienced in the entrance to Rio Janeiro. In 13° or 14° S. lat. the winds draw to E. S. E. North-easterly at Cape Frio.

KING GEORGE, 1st June 1792, crossed the equator in lon. 30° W. with the view of getting quickly into the S. E. trade, but being in the stream of the equatorial current, she was carried greatly to the westward, and saw the land about Cape Roque at 5 P. M. 6th June, bearing from S. S. E. to S. W. by S.; having steered south 4½ miles till 6 P. M. she tacked to the N. E. Cape Roque bearing S. S. E., a remarkable hummock South, breakers on Cape Roque Shoal S. by W. distant 3 or 4 miles, and off the land 8 or 9 leagues. She stood from hence, close hauled, to regain the variable winds in north latitude, in order to make easting, which considerably prolonged her passage to India. By crossing the equator far west the King George saw Cape Roque.

ACTIVE, bound to Pernambuco, passed the Cape Verd Islands in lon. 31½° W., and on the 4th March 1811, she crossed the equator in lon. 35° W., and afterward made the coast of Brazil far to the west of Cape Roque. March 25th, a pilot came off, and carried her into Parrazira Bay, where she procured a pilot to conduct her to Pernambuco. Coasting along to the eastward, with land breezes at times, the boat was daily sent on shore for provisions, and she anchored in the night, or when the wind was contrary, as the tide or current ran mostly to the westward. Active, by crossing the equator far west, ruins her voyage.

SALINAS BANK, was found to extend parallel to the coast a great way† to the westward of Cape Roque, being a steep coral reef above and under water, with a channel of 1 to 2 miles broad between it and the shore: here the pilot got the Active once aground, and at another time into 2½ fathoms. By crossing the equator far to the Westward, and consequently getting far to leeward of Cape Roque, this ship's passage was so much prolonged, as to render her voyage unprofitable, which occasioned a suit at law between the Freighters and Proprietors of the ship. Salinas Bank.

GENERAL STUART, August 16th, 1803, lost N. E. trade in lat. 14° N. lon. 27° W.; was then perplexed with light breezes from south to S. S. W. and stood to the S. E. On the 31st, was in lat. 6° N., lon. 15° W. stood to the westward till in lat. 1° N., lon. 27° W. September 10th, the wind then veering to S. S. E., saw Fernando Noronha and anchored 1803, General Stuart saw Fernando Noronha and Brazil coast.

* The transports with the ordnance stores on board, for the army of Monte Video, in 1807, by crossing the equator too far to the westward, were carried so far in this direction by the currents, that they could not get to the southward of Cape St. Augustine, and were twice obliged to stand to the northward, into variable winds, to regain easting, after having made two fruitless attempts to get into the regular south-east trade. This happened in May and June.

† The Brazil pilot says 30 leagues, in a N. W. direction.

there on the 15th: The well being nearly dry, and a high surf, procured only 9 butts of water at this place; sailed 19th, and made the Brazil coast on the 20th, in lat. 7° 10′ S.; on the 21st and 22d, the wind at S. S. E. to S. E., tacked several times at 5 or 6 miles from the shore; at noon 22d, in lat. 7° 48′ S. the wind veered to E. S. E. and E. by S., stood to the southward, and saw the coast no more.

1803, Warren Hastings saw Brazil coast.

WARREN HASTINGS, May 5th, 1803, lost north-east trade in lat. 9° 30′ N. lon. 23° 40′ W. and got S. E. trade 21st, in lat. 2° N. lon. 25° W. The trade being scant, made the Brazil coast 28th, in lat. 8° 30′ S.; on the 29th, the wind veering more easterly, lost sight of the coast in lat. 9° S. Whilst in sight of the land, had soundings from 25 to 40 fathoms.

1802, Tellicherry saw Fernando Noronha and Brazil coast.

TELLICHERRY, May 10th, 1802, lost north-east trade in lat. 7° N. lon. 25° W. and got S. E. trade 14th, in lat. 3° N. lon. 27° W.; had the trade far southerly, and saw Fernando Noronha 20th; tacked to north-eastward for 30 hours, saw the island again 22d, and passed to leeward of it; saw the Brazil coast 24th, and was obliged to tack frequently near it for several days, the wind south-easterly; in lat. 8° 06′ S. on the 30th, with a steady wind at S. E. and S. E. by E. was enabled to stand to the southward without tacking again.

1802, Strong westerly currents from equator to Brazil coast.

CUFFNELLS, May 28th, 1802, lost north-east trade in lat. 8½° N. lon. 22° W. and got S. E. trade June 4th, in lat. 5° N. lon. 21° W. From the equator, had a current setting W. and W. by N. from 30 to 52 miles daily, till the coast of Brazil was in sight 14th, in lat. 8° S.; tacked to the N. E. and stood on this tack near two days, then tacked to the southward, and saw the land no more.

1802, The same near Fernando Noronha & Brazil coast.

SIR EDWARD HUGHES, May 23d, 1802, lost N. E. trade in lat. 6° N. lon. 23° W. and got the wind at S. S. E. 25th, in lat. 5° N. lon. 23° 30′ W. The trade kept far south, and the current set westward strong. June 2d. saw Fernando Noronha, made several tacks till the Brazil coast was seen about Cape Augustine, June 7th; had some hard squalls here. In lat. 13° S. the wind veered to E. S. E. and to E. by N. June 13th, in 17° S. latitude.

1797, Saw Brazil coast.

HENRY DUNDAS, October 20th, 1797, lost N. E. trade in sight of the Cape Verd Islands, and crossed the equator November 4th, in lon. 30° 30′ W. with a scant S. E. trade. On the 8th, made the Brazil coast in 6° 50′ S. about Cape Ledo. The wind became more favourable near the land.

1795, Westerly current from Palma to Brazil coast.

BOMBAY CASTLE, and fleet, June 27th, 1795, at 3 A. M. in lat. about 7° S. had 18 fathoms on the Brazil coast, and tacked; the wind continued from south-eastward, with very little current, till she arrived at St. Salvadore, July 7. They had 6½° westerly current from Palma to the coast of Brazil.

1805, Europe saw Brazil coast.

EUROPE and fleet, October 16th, 1805, lost north-east trade in lat 11° N. lon. 28° W. and got south-east trade 26th, in lat. 4° N. lon. 29° W. November 4th, in lat. 6° S. saw the Brazil coast; had the wind near the land at E. by S. and E. S. E. stood to the southward along the coast: on the 7th, were in 18 and 19 fathoms, off Pernambuco or Fernambuco point; on the 8th, in lat. 10° 40′ S. the wind veered from E. by S. to E. by N. and E. N. E. no land in sight; worked into the Bay of All Saints, on the 10th, the wind at E. and E. by S. By crossing the equator too far west, the Company's ship Britannia, and King George transport, were wrecked on the Roccas Shoal in the morning of the 1st November, and several other ships in the fleet, narrowly escaped this dangerous shoal.

Two ships wrecked by going far westward.

# *BRAZIL COAST.*

## HEADLANDS, AND PRINCIPAL HARBOURS, WITH SAILING DIRECTIONS.

CAPE ROQUE, the N. E. extremity of Brazil, appears to be in lat. about 5° 10′ S.* lon. about 35° 40′ W. by observations taken in the East India ship King George in 1792, and the northern extremity of the breakers on the Bank of Cape Roque, she made in lat. 4° 53′ S. which lies 6 or 7 leagues northward from the Cape. Geo. site of Cape Roque.

CAPE LEDO, in lat. 6° 50′ S. lon. 35° 7′ W. by mean of several ships lunar observations, forms the outer extreme of the land bounding Paraiba River, which is a place of considerable trade, having 2½ fathoms on the bar at low water. Between Cape Roque and this place, the coast is generally lined by Reefs, with soundings extending to a considerable distance, but near Cape Ledo the bank is steep, as the distance from no soundings to 14 fathoms near the shore, is only about 3 miles, which makes great caution necessary in approaching this part of the coast in the night, because the Reefs project out to a considerable distance. Geo. site of Cape Ledo, and Paraiba river.

CAPE ST. AUGUSTINE, in lat. 8° 28′ S. lon. 34° 50′ W. is formed of a ridge of high land projecting into the sea, with the Fort N. S. de Nazareth on the summit of the hill over the Cape. Pernambuco, in lat. 8° 12′ S. about 6 leagues Northward of this Cape, is a place of great trade, being the Port of the City of Olinda: the entrance is narrow, with 4 fathoms in it at low water, nor is there room for many large ships inside, by which a pilot is necessary to conduct a ship into this Port. The Reef which forms the harbour extends nearly North and South, having a small Tower or Fort on its Northern extremity, and ships steering Westward for the entrance of the harbour, must haul close round this extremity of the Reef, and be ready to drop their anchor in the harbour, which stretches southward within the Reef. Large ships in want of refreshments, may anchor in the road well out, and get the needful supplies, where they will be enabled to proceed to sea, on the appearance of blowing weather. Geo. site of Cape St. Augustine and Pernambuco.

From Cape St. Augustine, the coast takes a direction about S. by W. several leagues, then S. S. Westerly to the Reefs of St. Francisco in lat. about 10° 48′ S. which lie about a league off shore, having a passage within them for small vessels. From hence, the coast lies nearly S. W. to the Bay of All Saints, having a reef lining it in many places, which forms a few intermediate harbours for small vessels. Directions.

If a large ship make the land about Capes Ledo or St. Augustine, it will be prudent not to approach it under 25 or 20 fathoms in proceeding to the southward, for with *due caution*, the soundings are generally a sufficient guide.

BAHIA DE TODOS SANTOS, or Harbour of St. Salvadore, is an extensive basin with several islands in it, the entrance being bounded by the large island Tapoa or Taporica on the west side, and on the east side by the peninsula on which the city of St. Salvadore is built. Cape St. Antonio, or Cape St. Salvadore, is the S. W. extreme of the peninsula, on Bahia.

* Cape Roque, is probably a little more to the south than here stated, although laid down in lat. 5° 0′ S. in several charts. The Active, already noticed, of having fallen to leeward of this Cape, made it in lat. 5° 34′ S. by noon observation, when passing between it and the Bank in 1811; but probably, more confidence should be placed in the observations of the King George, though taken at a considerable distance from the Cape, as they *seem* to have been inexperienced observers on board the Active.

Geo. site. which stands Fort Cabo, situated in lat. 12° 58′ S. lon. 38° 13′ W. by mean of lunar observations taken in the E. I. Company's ships; from the Cape, a shoal bank projects South and S. E.ward to the distance of 2 miles, called the Shoal of St. Antonio, on which the tide makes ripplings, but there is said to be not less than 4 fathoms water on it. The island Taporica is lined with a shoal bank that bounds the west side of the channel, and must be avoided: the depths are 10 and 12 fathoms in the fair track, a little outside the entrance of the harbour, deepening to 15 and 20 fathoms farther in.

Directions. With a fair wind, when Cape St. Salvadore is approached within 4 or 5 miles, it should be brought to bear N. by E. or N. by E. ½ E., and when Fort Cabo is on this bearing, steer N. ½ E. or N. by E. direct for the harbour, borrowing on the Cape bank if the wind be easterly; or as soon as Monserrate Point is seen open with the Cape point, (which is the first point to the northward on the east side of the harbour) steer right in.

The pilots say, that a ship may borrow on the Cape Bank to 5 fathoms with a steady breeze, but not under 15 fathoms with little wind. Should the wind be at E. N. E. or N. E., a ship may work in with safety, taking care to avoid the western shore; and a pilot will come off, if the signal be made. Having entered the harbour and neared Fort Balco, pass it in 14 fathoms about ½ a mile distant, then anchor abreast the city, in 8, 10, or 12 fathoms, about 1 or 1½ mile off: the bottom is sandy in some places.

Anchorage. The Glatton, moored in 8 fathoms, sand shells and coral, had the flagstaff of the Fort abreast the city bearing E. N E. ½ N. distant 1 mile, Fort Balco S. ½ W. about 1 mile, extremes of the island Taporica from N. W. by W. to W. S. W. distant 4 or 5 miles. There is a light-house on the Cape Point, to guide ships in the night. High water at 2¼ hours on full and change of moon.

Winds. This port is sometimes visited by outward-bound East India ships in want of refreshments, but its situation being in the middle of the S. E. trade, navigators are cautious of touching here, thinking they may find it difficult to get to the south afterward, on account of adverse winds, said (in some old books) to blow along the coast from the southward from March to September; but the East India ships, have never found any difficulty in getting from this port to the southward, even in the most unfavorable months, June, July, and August, for the wind generally draws well to the Eastward here, and more so, as you proceed to the southward.

Porto Seguro. PORTO SEGURO, or SEGUIRO, in lat. 16° 41′ S. is a place of considerable trade, but will not admit large ships, and the road outside is said to be foul ground: shoals lie about 5 miles to the E. N. E. of the rivers mouth, which must be left to the northward in proceeding to the road. If a ship touch here, a pilot will be necessary.

Abrolhos or Brazil Bank. ABROLHOS BANK, or BRAZIL BANK, extends from lat. 16° to 19° S., having various depths from 20 to 60 fathoms, and on the parallel of 18° 36′ S. it projects about 55 leagues East from Point Abrolhos, or to lon. 36° W.; but farther to the northward, it approaches much nearer to the coast. It seems not to be a continued bank, but probably is formed of several detached parts, with deep water between them; as soundings have been got by many ships far out on the bank, when others between them and the coast, had no bottom with 100 fathoms of line.

Royal Charlotte, Brunswick, and Glatton, left St. Salvadore 5th June 1803, and on the day following, in lat. 16° 0′ S. lon. 37° 48′ W. had soundings of 22 and 25 fathoms; steered from thence 15 miles S. S. E. to S. E. gradually deepening to 60 fathoms.

Warren Hastings, 3d June 1803, in lat. 16° 0′ S. lon. 38° 42′ W. by lunars, and 38° 54′ W. by chronometers, had 23 fathoms, then steered between S. ½ E. and S. S. E. 19 miles, in 22, 23, 25, 30, and 35 fathoms, and soon after had no ground 70 fathoms.

David Scott, 28th June 1810, in lat. 16° 35′ S. lon. 38° 26′ W. had from 19 to 24 fathoms; the coast in sight, bearing W. S. W. distant about 17 leagues.

The soundings of the ships stated above, appear to have been on the northernmost part of the Brazil Bank, which is probably a detached part projecting about 26 or 28 leagues from the coast, as all these ships lost soundings steering S. S. E.ward.

Busbridge, 5th June 1792, in lat. 18° 35′ S. lon. 35° 54′ W. by chronometers, and 35° 56′ W. by lunar observations, had soundings 30, 32, and 33 fathoms coral rock, probably near the eastern verge of the Bank of Abrolhas.

Dorsetshire, got no soundings, in passing not far from the situation where the Busbridge had ground. Variation on the verge of the Bank 3° E. 1803.

Sir Edward Hughes, 13th June 1802, in lat. 17° 18′ S. lon. 36° 15′ W. got no ground with 100 line; steered S. E. by S. 32 miles, no ground 100 fathoms; steered S. E. 22 miles, and got no ground 65 fathoms.

Upon this outer Bank of Abrolhas, to the eastward of the islands of the same name, there is no danger, and it is a guide for ships approaching the coast, although there appear to be deep gaps or chasms in it, particularly to the northward of 18° South latitude.

Abrolhos Islands, Geo. site.

ABROLHAS ISLANDS, in lat. 18° 1′ S. lon. 38° 25° W. distant about 12 leagues from the coast, consist of 4 small isles near each other, with some rocks and shoals adjoining; they are destitute of water, but abound with rats and turtle. There is said to be 6 and 7 fathoms off the east point of the easternmost island, which is the largest, and that a ship might anchor between it and South Island, but Capt. Isbister in hauling round the south side of the latter, in search of turtle, got his ship aground on a coral shoal. They are apparently safe to approach from the Eastward, as Capt. J. Crabtree in January 1811, passed outside of them at 8 or 9 miles distance, and had not less than 15 fathoms regular soundings, and they seemed clear of danger on that side.

Inner Channel.

To the West of the Abrolhos Islands, there is a channel 5 or 6 leagues wide, with 9 to 14 fathoms sand and mud, which is seldom used except by coasters. On the west side, toward the land, this channel is bounded by shoals and rocks above water, called the Hats.

Coast to the Southward.

From Abrolhas Point, the coast lies about S. by W. and is safe to approach, if a birth be given to the small isles which lie near it in some places, particularly the Three Brothers in lat. about 19° 30′ S. When round Espirito Santa, the coast trends more to the S. W. to Cape St. Tome, to the S. Westward of which, lie the three Isles of St. Ann, about a league or more from the shore, affording shelter and good anchorage under them; and fresh water may be got at a village to the northward of them, in Formosa Bay.

Cape Frio.

CAPE FRIO (COLD), about 11 or 12 leagues to the S. W. of the Isles of St. Ann, is formed by an island, having a channel 1½ mile wide between it and the main land, but although the depths in it are 7 and 8 fathoms, it is not safe, on account of eddies and strong currents. Ships bound for Rio Janeiro, steer always to make this Cape, which is situated in lat. 23° 1′ S. and in lon. 41° 50′ W. or 1° 4′ E. from Rat Island in Rio Janeiro Harbour, by Capt. P. Heywood's chronometers; this is probably very near its true situation, although the observations of Captains Torin, Mortlock, and Krusenstern the Russian circumnavigator, place it in lon. 41° 42′ W. Geo. site.

The Cape appears like two paps or hummocks, and close to it on the N. E. side, lie several small isles, which like the island that forms the cape, have deep water close to them. The land about the Cape is of middling height, appearing at a distance like islands; to the northward, the land is higher. From Abrolhas Bank to this place, soundings are generally got at a moderate distance from the coast.

Sailing directions into Rio Janeiro.

RIO JANEIRO HARBOUR'S ENTRANCE, is about 20 leagues West from Cape Frio, and ships approaching the latter, must be careful not to run into the bay to the north of the Cape, with the wind Easterly or S. E. in the night, which has happened to several ships by mistaking the latitude of the Cape, and nearly proved fatal to them.

In steering from Cape Frio to the westward, keep 3 or 4 leagues off shore, and when the distance is 9 or 10 leagues west from Cape Frio, you will see the Sugar-Loaf, if clear weather, and soon after Rodondo, (or Round Island) bearing about west, appearing like a small hummock, and also the extremity of the land to the westward; steer direct for it, and you will soon see Raza, or Razor Island, and in sailing along, will pass the Marice Islands, situated near the shore, distant 5 leagues or more from the entrance of the harbour, which are 2 or 3 small low islands. Round Island, by chronometer, bears from Cape Frio S. 85° W. distant 64 miles, and is in shape a perfect haycock.

Razor Island is low, but has a kind of small peak, and seems as if sliced off to the northward, by which it probably got the name of Raza:—When you make it bearing westward, it resembles a slipper. The soundings are 30 and 35 fathoms near these islands on the outside, and to the eastward of them. Steering on for Razor Isle, you will make the Islands Paya and Maya*, which are 4 to 6 miles eastward of the harbour, and lie near the shore, off Point Tarpu:—Paya is the outermost, and is on with the Sugar-Loaf bearing N. W. by W. ½ W. by compass; Maya is within it, and there is another small islet within these, so near the shore that it is not always perceived. Razor Island bears from Round Island by compass, E. by N. ½ N. and from the Sugar-Loaf S. by W.

The Great Channel, leading to the harbour, is between the Paya Islands to the eastward, and Razor Island westward:—when these islands are approached, the entrance of the harbour will be perceived, which is formed by the Sugar-Loaf to the westward, and Santa Cruz point to the eastward, on which is a fort. Having the Sugar-Loaf open to the westward of Paya, steer direct for it; and should the wind not be likely to carry you fairly into the harbour, anchor in 10 or 12 fathoms, when you are within ½ or ¾ of a mile of a small isle, called Cutunduba, with it bearing about N. W. by compass, which isle lies just without the Sugar Loaf. If you go farther in, the swell on the bar will make you roll your ports in the water; and it is imprudent to anchor between the Sugar-Loaf and Santa Cruz, in the narrow part of the entrance to the harbour, where the depth is greater, the bottom rocky, the channel not a mile wide; with a tide rushing through it, between the rocky shores on each side, at the rate of 6 or 7 miles an hour on the springs.

The sea breeze generally sets in before mid-day in the entrance of the harbour, and continues till about sun-set. You should not enter between the Sugar Loaf and Santa Cruz point with an ebb-tide, and the sea breeze far expended. Several ships, at different times, have been nearly lost, by anchoring in the gut between them†.

Farther description and directions.

If you do not get a pilot outside, keep nearer Santa Cruz point than to the Sugar Loaf, in passing between them. There is a fort called St. John, a little above the Sugar Loaf, which with Santa Cruz Fort on the opposite side, command the entrance of the harbour. When past the latter, the course up the harbour is about N. by W. ½ W. stand boldly on for the anchorage abreast the city, if there is a moderate commanding breeze; and you cannot have a more convenient birth for watering, &c. than with the principal church in one with the small Isle Ratos, or Rat, S. 53° W. by compass, and the flag on Villegagnon Fort on with the Sugar Loaf S. 8° E. where you will be abreast the watering place, in 17 fathoms mud and

* The Nereus passed between them, and Capt. Heywood observes, that there are good passages between all the Islands which lie off the entrance of Rio Janeiro harbour.

† In September, 1803, H. M. ships Sceptre and Grampus, with the outward-bound fleet for India, steered in for the harbour in the afternoon, 16th September. At 7 P. M. it became squally and dark, with thunder, lightning, and rain; the shore was discernible only by the flashes of lightning. The journal of the Essex, states, that they anchored at 8 P. M. near the Sugar-Loaf, and nearly drove on shore with two anchors down. The Earl Spencer, also anchored at 8 P. M. in 19 fathoms, with the best bower, and soon perceived they were near the Sugar Loaf, which obliged them to let go the small bower and sheet, to prevent being driven on shore. The ebb tide was setting round the point to the southward, near 7 miles an hour. This ship's journal, mentions, that all the fleet were in danger in different ways, and that a flash of lightning saved the Sceptre from running on shore on Santa Cruz point.

sand. Isle Cobra lies before the city, and some ships pass round the north part of it, and anchor before the monastery at the N. W. end of the city.

If the breeze is light and flattering, as soon as you pass Santa Cruz point, haul up to the eastward; for should you be obliged to anchor short, the ground is good on this side. The inner harbour lies within the islands Cobra and Emaxados. On the N. W. side of the former, there is a most convenient place to heave down ships of any size.

Rio Janeiro Harbour is easy of access, readily known by the remarkable land about it, and is very commodious. You should moor as soon as possible, the tides being much influenced by the winds, and the latter so variable, that it is difficult to keep a clear anchor 24 hours: it is high water at 4½ hours full and change, the ebb then running much longer than the flood, and the velocity 3½ or 4 miles per hour. Plenty of fruit, vegetables, and indifferent beef, are obtained at this port, but a ship intending to stop only a few days, ought to make application for a much longer time, as some of the governors have been known to refuse strangers sufficient time to repair, and refresh their ship's crews. Caution.

Rio Janeiro City, called also St. Sebastian, is the capital of all Brazil, and the residence of a viceroy.* The water is conveyed in pipes to the jetty, where boats lie and fill their casks with ease, as the rise and fall of the tides are inconsiderable. Hogs, and poultry, are dear; yams and pumpkins are easily obtained, which are very useful for a scorbutic ship's company, as they will keep a long time at sea.

When bound out, if the wind is steady, steer direct for Santa Cruz point, but edge over to the eastward as soon as you can if it is light, till Santa Cruz bears about S. S. E. ½ E. Should you be obliged to anchor, go no farther out, than to bring Villegagnon flag-staff in one with the peak at the back of the town, bearing about W. by S. ¾ S., and square Island Fort on with the west-end of Cutanduba Island, where you will have 15 fathoms mud and sand:—this anchorage, is about midway betwixt Villegagnon Fort and the eastern shore. Farther out, the ground is foul and rocky. There is a small perpendicular islet with a church and house on its summit, elevated about 100 yards from the sea, having its communication with the main by a bridge: on the top of this islet, there is a well of excellent water, the water not more than 20 feet from the surface. Directions for sailing out.

The reason for advising to keep to the eastward, as above described is, should you weigh in the morning with the land breeze, which is at first generally very light, you are in the fair way of the tide, which will set you right out; but if more to the westward, it would be liable to horse you upon Square Island, which consists of some rocks with a fort on them, just within the Sugar-Loaf. The bar is about ½ or a ¼ of a mile without Santa Cruz point; the least water on it is thought to be 6½, or ¼ less than 7 fathoms at low water spring tides. It is about ½ a mile in breadth, the depth increasing gradually on each side. The Sugar Loaf is in lat. 23° 00′ S. and about 62 miles west from Cape Frio.

Rio Janeiro, affording abundance of refreshments, is frequented by ships of war, and others bound to India with troops on board, for obtaining needful supplies; but unless they are in real want of water or other refreshments, or otherwise obliged to run for a port, it seems not advisable for ships destined to India, to touch at any of the ports on the coast of Brazil, as it must considerably lengthen the passage. Should a squadron of ships be absolutely necessitated to stop somewhere, it may however be preferable to go into Rio Janeiro, rather than into False Bay at the Cape of Good Hope during the winter season, where supplies are not so abundant, nor the anchorage so safe for a fleet or large squadron.

ILHA GRANDE, in lat. 23° 17′ S. is about 4 leagues in length, the eastern channel into its harbour being about 16 leagues to the W. S. W. of Rio Janeiro entrance, which is very safe, as is also the other channel to the west of the island. The whole of the channel formed between Ilha Grande and the Main, is a spacious and safe harbour for ships of any Ilha Grande.

* Since the invasion of Portugal by the French, in 1808, Rio Janeiro has been the seat of the Portuguese Government.

number and size, with soundings from 6 to 15 fathoms. There is fresh water on the west end of the Island Meranbaye, which bounds the east side of the eastern channel, and wood may be got on the contiguous islands: refreshments may also be got at the Village dos Reis, situated on the main, opposite to the middle of Ilha Grande.

Island St. Sebastian.

ISLAND ST. SEBASTIAN, in lat. 23° 45′ S., about 22 leagues to the W. S. W. of Ilha Grande, forms a safe harbour between it and main, by entering from the northward and keeping near the island, as the main land is lined by a shoal bank. Refreshments may be got at the villages on the island, or at those on the continent. The south entrance is not above a mile wide, but with proper caution, may be navigated in a middling sized ship, as Captain Heywood, passed between the Island St. Sebastian and the main, in the Nereus frigate, in 1810, where he lay 2 days during a S. E. gale, surveying the channel. He also passed between Ilha Grande and the main land.

Santos.

SANTOS BAY, in lat. 24° 0′ S. about 13 leagues to the W.S.W. of St. Sebastian, affords safe anchorage from all winds, excepting those at S. E. and Southward, and the town is 4 or 5 miles up the river. In this track, the Alcatrasses Isles, having foul ground about them, lie about 4 or 5 leagues off shore, and 5 or 6 leagues distant from the Island St. Sebastian to the S. Westward. ISLE REDONDO, or Round Isle, in lat. 24° 30′ S. and about 6 or 7 leagues off shore, has a reef a little inside of it, extending about 4 miles parallel to the coast; to avoid which, ships that happen to get to the westward of Redondo, ought to keep it bearing to the northward of E. by N., for with it bearing E. ½ N. a ship will be within ½ a mile of the reef.

Alcatrases.

IsleRedondo.

From Isle Redondo, to St. Catherina, there are several other small islands nearer the coast than the former, and it is safe to approach, having in this space some harbours, the best of which, is that of St. Francisco, in lat. 26° S. and Garoupas Road, in lat. about 27° 0′ S.

Island St. Catherina. Geo. site.

ISLAND ST. CATHERINA, extends about 10 or 11 leagues N. by E. and S. by W. the north end being in lat. 27° 19′ S. lon. 47° 50′ W.: the channel between this island and the main, forms an excellent harbour for ships of every description; and it is navigable to the narrow strait near the middle of the island, a little beyond which, stands the town of St. Catherina. From hence, to the south end of the island, the channel will only admit small vessels out to sea.

Directions.

The proper passage into the harbour, is round the north end of the island, between it and the Isle Alvoreda, distant about 2 leagues to the northward; but a ship may pass occasionally betwixt this isle and the other small isles to the N. W. of it, or between the latter and the main if necessary, the depths being from 8 to 12 fathoms among those isles. Having rounded the north end of the island, steer to the S. W. and southward, keeping about mid-channel between St. Catherina and the main, and anchor under the small Isle Atomeri, situated near the latter.

Atomeri Isle, is in lat. 27° 22′ S. observed by Dr. Horner, Astronomer to the Russian Voyage of circumnavigation, under the direction of my friend, Captain Krusenstern, who made the variation here 7° 50′ E. in 1803.

Here ships are well supplied with fruits, vegetables, and refreshments of various kinds, but the prices are not very low. Several small isles, line the shores of St. Catherina on both sides, those off the south end extending about 3 leagues to seaward; and the soundings increase to 65 or 70 fathoms about 10 leagues east of St. Catherina.

Coast from hence to Rio de la Plata.

Although neither the Spanish, or Portuguese charts, nor those published hitherto in this country, mark any soundings between Rio Janeiro and Rio de la Plata, yet every part of this coast seems to be fronted by soundings, in some places stretching to a considerable distance off shore.

From the Island St. Catherina to Morro St. Marta, the coast extends about 20 leagues S. S. W.; from hence to Cape St. Mary, at the entrance of Rio de la Plata, the direction of the coast is generally about S. W., and in this space it has no safe harbours for large ships, but the shore in most places may be approached to a moderate distance with safety.

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# *INSTRUCTIONS and OBSERVATIONS for NAVIGATING the RIO DE LA PLATA, or RIVER PLATE.*

## BY CAPTAIN HEYWOOD OF THE ROYAL NAVY.

AT RIO DE LA PLATA ENTRANCE, the prevailing winds during the summer months, from September to March, are north-easterly, with tolerably clear weather over head, but a dense atmosphere near the horizon. These winds haul gradually to the eastward as you advance up the river; and about the full and change of the moon, strong breezes from south-eastward are common at this season, accompanied with rain and foul weather. At Buenos Ayres, during the summer months, the S. E. winds are generally fresh in the day-time, hauling round to northward in the night. Rio de la Plata. winds.

During the winter months, from March to September, the prevailing winds at the entrance of the Plata are S. W., or more westerly; but up the river, more generally from the northward, than the southward of west.

In the winter season, is the best weather at Buenos Ayres, for the winds being chiefly from N. W. to S. W., the water is smooth, and the communication can be kept up between the shore and the shipping with more facility. The weather is sometimes foggy, but fogs are most common in the months of July, August, and September, prevailing more at the entrance of the river, and as far up as the S. E. tail of the Ortiz, than above these banks.

As it cannot be said regular tides exist in the Plata; but currents as uncertain in their duration as they are irregular in their rate and direction, no *certain* allowance can be made for them; therefore, a *ground log* should be used, to find the course made good and distance run. Tides or currents.

The tides, when the weather is settled, and the winds moderate, seldom rise or fall more than 5 or 6 feet; though at Buenos Ayres, 8 miles distant from the city, we found in the Nereus, when the winds were strong at N. W., sometimes only 15 feet water; while with strong breezes from E. S. E. to S. S. W., the depth was upwards of 5 fathoms: but, except on such extraordinary occasions, we had between 17 and 22 feet water.*

The river Plata has many singularities; which arise, perhaps, from its formation being different from any other known river. Its entrance being very wide and shallow, it is affected by every change of wind in a remarkable manner; that a shift of wind may be predicted almost to a certainty, by observing carefully the state of the barometer, and the set of the currents, which usually shift before the wind. In calm weather the currents are generally very weak, setting up and down the river alternately, and nearly as regular as tides. When the winds are variable, the currents are equally so; and I have known the ship to be *current rode* four different ways in less than six hours. When the current comes in from eastward

* I have heard, however, some marvellous stories, of the river having been almost dried up, across from Buenos Ayres to Colonia, during heavy westerly gales.

along the north bank of the Plata, a north-easterly wind may generally be expected to follow, and at the same time (should the wind have been previously to the S. E.) the barometer will fall a *little*; but much *more*, if the transition be quick from *south-west*, without stopping in the south-eastern quarter.

When the wind continues in the north-east quarter, proportionate to its strength, the mercury is more depressed than with any other wind, and then there is usually a set *into* the river on the north bank, and *out* on the *opposite* bank. Indeed, whilst the winds are between N. E. and S. S. E. the current generally runs to the westward, past *Monte Video*, though without much augmenting the depth of water off that place, but filling the river above the banks.

Winds between N. N. E. and W. N. W. make the water lowest; the *out-set* being then strongest along the south bank of the river, past the Points del Indio and Memoria; but very inconsiderable along the north bank.

Prior to a S. W. gale, or *Pampero*, the weather is usually very unsettled, with unsteady and variable winds in the north and north-west quarters; preceded by a considerable *fall* of the mercury, though it usually *rises* a little again *before* the wind shifts to the *south-west;* and often continues to rise, even though the wind may increase from *that quarter*. Before these set in at Buenos Ayres, the current runs up and fills the river unusually high; at the same time, as strong an *out-set* is experienced along the north bank; which continues whilst the winds are strongest from W. S. W. to south, seeming to prove, that these winds force up from the southward, a large accumulated body of water past Cape St. Antonio, which can only find a passage out again by the north shore, where they increase the depth of water, as well as up the river, and particularly in the shallow harbour of Monte Video. Whilst these S. W. winds blow, the air is cold, and the atmosphere clear and elastic, in a degree rarely to be met with in any other part of the world. They are generally succeeded by some days of fine serene weather; the wind continuing moderate from the southward, or varying to the eastward.

I have never known the velocity of the tide or current in any part of the river, to exceed knots per hour; although it is reported, sometimes to have run 6 or 7 miles an hour!

As the winds outside the river Plata, and particularly about Cape St. Mary, are most frequently from the north-eastward and northward, except when the S. E. summer, and S. W. winter gales blow about the times of new and full moon, I consider it most advisable, for ships bound into the river, to get in with the land about the latitude of that cape, which is 34° 40′ S., and its lon. 53° 54′ W. of Greenwich, or 2° 09′ E. of Mount Video.

Geo. site of Cape St. Mary.

In lat. 33° S. the bank of soundings extends off the land full 36 leagues, where the depth of water in lon. 50° 20′ W. is 94 fathoms, and the quality of the bottom dark olive-coloured mud, or ouze, as it is all along the outer verge of the bank. In lat. 34° S. and 30 leagues from the land, the bank is steep; and the soundings decrease quickly in standing to the westward, to 25 fathoms 20 leagues from land.

Bank of soundings.

In lat. 34° 20′ S, lon. 51° 50′ W., or about 30 leagues east of the Great Castellos Rock, the depth is 63 or 64 fathoms dark mud. In standing for the land, between the Great Castellos and Cape St. Mary, the water shoals in a short distance from 60 to 25 fathoms; and the quality of the bottom changes to sand, which grows *coarser* as you approach the coast; and as far as 7 miles off shore, is intermixed with *shells*. *This bottom* is found *only* in, and to the northward of the latitude of Cape St. Mary, except very close in with this cape.

To the southward of 34° 40′ S. the bottom is chiefly mud, intermixed with *fine* sand or gravel; and if a ship happen to be set to the southward of Cape St. Mary, as she hauls in for the land, yet keeps to the *northward* of *Isle Lobos*, she will get out of fine sand, into dark mud; which is the quality of the bottom (chiefly) between Cape St. Mary and Lobos;

as well as 8 or 9 leagues to the eastward of that island; and the depth of water between them, is generally 26 to 20 fathoms.

In lat. 35° S. lon. 52° W., or 42 leagues *true* east of Lobos, there are about 90 fathoms water, dark sandy bottom; from thence, the bank of soundings takes a S. W. direction. East of Lobos 27 leagues, the depth is 25 fathoms; and in steering in, on its parallel, the same depth nearly continues till very close to that island. But if set a little to the southward of Lobos, the water will shoal even to 10 fathoms perhaps, on a hard sandy or gravelly ridge that extends all the way from the *English Bank*, in *its* parallel as far as lon. 52° 30′ W.; or full 18 leagues to the eastward of the meridian of Lobos.

Thus, the *approach* to this river cannot be considered dangerous, if proper care be taken in navigating, and due attention paid to the *lead*, and the *course* steered.

Captain Bouverie, gives the following remarks:—

" CAPE ST. MARY, is a low point, fronted by rocks, and the direction of the coast to Cape St. Mary.
" the westward of this Cape, becomes more *westerly* than at any other part *northward* of
" it. About 6 miles *north* of it is a house, with a row of trees northward of the house, (pro-
" bably a fence of high, prickly pear-bushes,) which is very remarkable.

" About a mile *south* of the house, is a bluff point, with a few rocks at the foot, which is
" remarkable, being different from the rest of the coast, the general character of which is a
" *sandy* beach. You cannot fail knowing the cape by these marks, when running down the
" coast *near* it: but at a considerable distance off, you will not perceive them."*

" To the northward of the cape, between it and Palma, you have 10 or 11 fathoms at a
" little distance from the shore.

" Ships generally make the land with N. or N. E. winds; therefore it is best to keep in Directions.
" the latitude of the cape or a little to the northward of it, till you get soundings, as the
" current sets to the S. W.; but do not make the land north of the cape; for although there
" seems no real danger, yet the water in many places is *shoal* a long way off the land, and
" would alarm strangers.

" In lat. 33° 27′ S. lon. 52° 09′ W. is a shoal where we found 9 fathoms water; which is
" probably a ridge, running in that parallel of latitude all the way to the shore. In lat. 34°
" S. is some tolerably high land, on which is a Spanish fortress, called Fort Teresa; being
" a square, with bastions at the angles, and stands about a mile from the beach. About 6
" leagues N. N. E. from it, is a mark set up, as the termination of the Spanish territories.
" Being in the latitude of Cape St. Mary, and having got ground in 28 or 30 fathoms water,
" fine sand and shells, you may reckon yourself 20 leagues off shore: with from 15 to 20
" fathoms, sand and clay mixed, you are not far off the land. When you have not seen the
" land before night, be sure to keep to the northward of the cape by your reckoning, as the
" current sets to the southward; with north and N. E. winds: with south and S. W. winds, it
" runs strong the other way."

Agreeing with Captain Bouverie, that it is generally advisable to make the land about Cape St. Mary, I would recommend, if the wind be between S. E. and N. N. E., to enter the river on the *north side* of the English bank, passing Lobos on either side, according to the wind and state of the weather. There is a good passage between Lobos and the main, having 17 to 14 fathoms water.

LOBOS ISLAND, is in lat. 35° 01′ S. and lon. 54° 39′ W., or 1° 24′ east of the Mount Video. It bears about *true* S. W. from Cape St. Mary, distance 41 miles. Variation off it, 13° easterly in 1813. Geo. site of Island Lobos.

* The Nereus tacked in 12½ fathoms water, the prickly pear-hedge, on with Cape St. Mary, bearing north by compass, and the breakers stretching to the S. E. of the Cape N. 7° E.; and her distance from the cape was about 8 miles.

Directions. When within 3 or 4 leagues of Cape St. Mary, in 17 or 18 fathoms, S. S. W. by compass is a fair course to steer for passing *outside* of Lobos in the night-time; for, with the wind from the eastward, or N. E., the set along shore *into* the river must be guarded against. Steering this S. S. W. course, the depth of water will increase to 20 and 22; and some casts, perhaps of 25 or 27 fathoms, (if you are set neither to the westward nor to the southward of it,) and the bottom will change, first to sandy mud and then to dark-blue mud, as you approach the latitude of Lobos. If you are set to the *southward*, in steering S. S. W., you will not deepen so much; the bottom will keep *sandy;* and when you approach the latitude of Lobos, you will have no more than 19, 18, and 17 fathoms; but if you are set to the *southward of Lobos* a few miles, you will have hard casts of from 16 to 10 fathoms, and may rest assured of being on the parallel of the English Bank, and may therefore make a west-northerly course *true*, till you find the bottom *soften;* as it is all dark-blue or greenish mud in the channel, between the foul ridge of the English Bank and the north shore, all the way up to Monte Video, in the fair way from Lobos. When off Lobos, if the weather threaten, and it should be likely to blow, a ship will find safe anchorage in the harbour of Maldonado. Maldonado, sheltered from southerly winds by the island of Goritti, which bears N. 42° W. *true* 11 or 12 miles from Lobos.

" Captain Bouverie, observes, that, the Spanish surveys of this bay, mark sufficient depth " of water for any ship between every part of the island and the main; however, it cannot " be safely entered but by small vessels, except to the *westward;* and you must not go far- " ther in, than to bring the N. W. point of Goritti to bear S. S. W. half W., or S. W. by S. " by compass, with 4½ or 5 fathoms stiff clay. With southerly winds, there is in the east " passage a heavy swell; and the water, from the ground being uneven, breaks almost the " whole way across in bad weather. The Diomede (fifty-gun ship) passed through it to " the anchorage before its dangers were known, and had not less than 18 feet: but there are " places with only 1½ fathom, very irregular soundings. There is a bed of rocks to the " south of Goritti, from which the Tower of Maldonado, bears north, and the outer part " of point del Este," E. N. E. ½ E.

" In the direct line of the entrance of the bay from the westward, lies a bed of rocks, " having only 3, and 2¾ fathoms on some of the patches; from which the N. E. point of " Goritti bears E. ½ S., North-west point of ditto E. by S. ½ S., South-west point of ditto " S. E. by S., Point Ballena bears W. by N. ½ N., and the hill of Pan de Azucar, just " within the extreme of Point Ballena.

" In mid-channel between these rocks and the island, there are 6 and 7 fathoms; and " their distance from the island is about ¾ of a mile: there is 7 fathoms close to them, all " round the western side. The watering place is on the main, close by a battery; and the " stream loses itself in the sand, except when swollen by heavy rains; you have to roll your " casks about 60 yards over the sand, and the water is very good."

Directions. Having Lobos bearing N. by W. by compass, distant 3 or 4 miles, you will have about 18 fathoms; and in making a *compass* course W. ½ S. by *ground log;* (having due regard to the wind and current at the time,) you will make the island of Flores *a-head* of you. In this track, your soundings will gradually increase from 18 to 12 fathoms due south of Black Point, and to 7 or 8 fathoms when you approach within 9 or 10 miles of Flores.

Though Captain Bouverie says, " you may run quite up to Monte Video, either by night " or day, by making a due west course, first trying the current to make allowance for it;" and though I have frequently done it myself, yet I would not recommend it as a general rule to be followed by *strangers*. Great care and attention to the course made good, and to the soundings, are indispensably requisite to those who attempt to conduct vessels during the night, *in any part* of this river; and even these, have often been insufficient to save ships from destruction.

FLORES, bears *true* W. 4° 30′ N. from Lobos distant 52 miles; it extends nearly N. E. and S. W., having a small hummock in the middle, and one at each end, that to the S. W. being 39 feet high. Between these, the land is low and marshy; and overflowed sometimes between the central and N. E. hummock. It may be seen at the distance of 5 or 6 leagues from a ship's deck, in clear weather. Flores Island.

There is good anchorage all round this island; but a reef extends in a N. W. direction from the north point about a mile. Seals and sea-lions, and various aquatic birds, resort to this small island as well as to Lobos; and, in the months of August and September, great quantities of very excellent eggs may be procured. With the wind easterly, boats may land on the western side of Flores, particularly in a small cove very near the S. W. part of the island. From Flores, W. N. W., the Caretas rocks (above water) are distant about 5 miles, and there are 5 fathoms between them. Caretas Rocks. True south, at the distance of 11 miles from Flores, lies the ***north part*** of the English Bank, having on it in that lat. 35° 08′ S., about 12 feet water: the depth of water, between Flores and the English Bank, is 7 fathoms all the way across, to within a very little distance of both. The English Bank, in lat. 35° 12′ S. generally has breakers; and, with a low river, is ***above*** water in some places. Its extent to the southward has not yet been accurately defined, and for 70 or 80 miles to the south-eastward of it, the ground is said to be foul and uneven, and has not been explored. Englishbank

Between the Archimedes Bank and the English Bank, there is a swatch about 5 miles wide, with 5 fathoms water, according to Captain Beaufort of the Royal Navy, who explored these banks in 1807.

ARCHIMEDES' BANK, the shoalest part with 2¾ fathoms, is 4 miles in extent about north and south by compass; and has 4 fathoms all round. The centre of it is in lat. 35° 12′ S., and the Mount Video bears *true* N. 22° W. from it, distant 20 miles. Besides this bank, there is a Small Knowl in lat. 35° 14′ S., which bears true south from the Mount Video, 21 miles, with not more than 3½ fathoms water on it, and about 4 fathoms all round. Passing to the southward of Flores, at the distance of 2 miles, you have 6½ or 7 fathoms, and may steer W. ¼ S. by compass to pass point Braba, which bears true W. 4° N., distant 4 leagues from the S. W. end of Flores. This point is bolder to, than the land to the westward between it and the town of Monte Video, and may be passed close, in 4½ or 5 fathoms, at 1 mile or 1½ mile distance. The best anchorage for a frigate off the town of Monte Video, is with point Braba bearing by compass, E. by N. ½ N., the cathedral N. E. by N., and the Mount about N. W. by N., in 3½ or 4 fathoms, 2 miles or more from the town, with the harbour quite open. The bottom is all soft mud. Archimedes' Bank. Monte Video.

MONTE VIDEO HARBOUR, is very shoal, having only from 14 to 19 feet water; but the bottom being very soft, vessels receive no damage by grounding. Captain Bouverie says, "the wind at S. S. W. blows right into the harbour, causing a good deal of sea, and "occasions the water to rise a fathom or more.

"In a long continuance of fine weather, the tides sometimes (though not often) assume "the appearance of regularity. They are governed entirely by the winds, and southerly "winds cause the water to run out on the north shore strongest: fine weather, and a N. W. "wind, make the water lowest. It is usual, in Monte Video harbour, to have an anchor "to the S. E., and another to the S. W., and to take one in abaft from the northward; for "the water forced in by the southerly wind, sometimes rushes out with astonishing rapidity; "when the anchor to the north is of the greatest service." The ***Mount*** Video is in lat. 34° 53′ S., lon. 56° 03′ W. of Greenwich; being 1° 24′ W. of the island of Lobos, and 2° 10′ E. from the cathedral of Buenos Ayres.* On the summit of this mount, there is a Geo. site.

* By the observations of Captains Heywood and Beaufort of the Royal Navy, who together surveyed this place, and observed upon the Mount.

fortified building, whose base is 42 feet 6 inches by 20 feet, used sometimes for a light-house. The diameter of the lantern is 10 feet 6 inches, and its elevation above the level of sea 450 feet. At the base of the mount there are several runs of excellent water, particularly in two small smooth sandy bays, at the S. W. part of it, where ships in the outer road may supply themselves with ease; and another on the east side of the mount, just abreast of Rat Island, adapted to ships in the harbour.

Giving the preference to the passage on the north side of the English Bank, especially when the wind is any where between S. S. E. and N. N. E. on passing Lobos, because it may be expected most probably to shift, if it does at all, round by the north to the westward; though, perhaps, not before that wind, and the in-set together, might carry a ship up to Monte Video: yet, if the wind should be to the *north-westward* at the time of making the land, it may be pretty confidently expected to shift next to the Westward or S. W., and therefore a ship should not strive to beat up round Lobos in the north channel against an out-set, but stand at once over towards Cape St. Antonio; where by the time she could stretch across, she would most likely find a S. S. W.-wind and N. W. current to run up with, along a weather shore to Buenos Ayres; or to Monte Video, if bound thither, passing to the westward of the bank of Archimedes, in about 5 fathoms water; or, if the Mount should be seen in time, it ought never to bear to the *westward* of *north* by compass, till approached within 5 leagues.

Passage up by the South side of the river.

In standing to the southward from abreast of Cape St. Mary, with the wind south-westerly, a ship will have from 18 to 24 or 25 fathoms when in the latitude of Lobos, and about 12 or 13 leagues to the eastward of it; and making a *S. S. E. course*, the water will then shoal to 18, 16, 12, or 11 fathoms in crossing the ridge, which hereabout is generally composed of grey speckled sand, mixed with stones; after which, the depth increases gradually to 35 or 36 fathoms, over a sandy bottom, in lat. 35° 40′ S., and lon. 53° 25′ W. In lat. 36° S., and 15 or 20 miles farther to the eastward, you will deepen off the bank entirely. Having got as far to the southward as 36° S., you may consider yourself in the fair way for proceeding up on the south side of the English Bank, and if the wind serve, a *true* west course will be proper.

In lat. 36° S. the depth of water on the meridian of Cape St. Mary is 38 fathoms, the bottom fine grey sand like ground pepper. Steer to the westward on this parallel of 36° S., the depth will decrease to 19 or 18 fathoms *true south* of Lobos; and for 10 leagues further you have from this depth to 15 fathoms. But if from the lat. of 36° S. on the meridian of Lobos, you make a W. by N., or W. by N. half N. course *true*, you will shoal the water to 8, or 7½ fathoms in lat. 35° 45′ S., on the meridian of the English Bank. The quality of the bottom generally in this track is sandy, mixed with small stones; and the nearer you approach to the ridge of the English Bank, it is intermixed with bits of shells, and sometimes with clay or mud.

From lat. 35° 45′ S., due S. of the English Bank, a W. N. W. *true* course to lat. 35° 33′ S. will bring the Mount Video to bear true north, in about 6½ fathoms mud, at the distance of 13 leagues from Point Piedras: and from this position, the same true course may be made, to raise the land about Point del Indio, if bound up to Buenos Ayres; or N. W., or *more northerly*, to get sight of the Mount Video; having due regard to the set of current, up or down the river, that you may neither be horsed on the S. E. tail of the Ortiz Flats, nor on the western part of the Archimedes' Bank. The bottom above this, is soft mud or clay in the channels, fit for safe anchorage. In lat. 35° 30′ S., or thereabout, and due south of the Archimedes' Bank, or some miles further to the *eastward*, I have been told by some persons, they have had as little as 4 fathoms, *hard* ground.

To sail from Monte Video to Buenos Ayres.

Ships leaving Monte Video to proceed up to Buenos Ayres, must be very attentive to the lead; and the course steered across the river, must be very carefully regulated by the set of current at the time. If the weather be sufficiently clear, the Mount is the most sure guide,

keeping it by an azimuth compass, on the *magnetic* bearing N. E. by N.; and when it sinks to an eye *in the top*, a more westerly course may be steered to raise the land about Point del Indio. This direction is intended to apply particularly to frigates, or any ships drawing more than 16 feet water; because it is not advisable *for them* to cross the tail of the Ortiz Flats much further to the *westward* than a true S. W. course from the Mount will take them; for with a *low* river, I have had barely 3¼ fathoms in the Nereus, with the Mount bearing N. 35° E. by compass, distant 10 leagues. At other times, I have sunk the Mount on a N. 53° E. magnetic bearing, and had as much as 3½ fathoms water; but the river was then well filled.

On the south-eastern part of the Ortiz bank, which is *there* hard stony sand, there is still remaining (in 1813) part of a mast, or beacon, about 12 or 13 feet high. It is in lat. 35° 02′ 15″ S., and 0° 45′ west of *Mount* Video; from which it bears true W. 14° S. 37 miles. There is about 12 or 13 feet alongside of it; 3 fathoms 2 miles to the eastward of it; but not more than 10 or 12 feet, as far as 3 miles S. W. of it. Point del Indio bears *true* S. 33° W. 16 or 17 miles from it. Ortiz Bank.

To the distance of full 17 miles south-eastward of the Ortiz Beacon, there is *generally no more*, and often *less* than 3¼ fathoms; the bottom tough clay nearest the bank; and in some places farther to the *south-eastward*, soft mud, not more than 3¼ fathoms.

After sinking the Mount about N. E. by N., and having 3½ fathoms, a W. S. W. course will raise the land (if the weather is clear) about Point del Indio, to the eye at the mast-head; and probably you will not have more than 3¼ or at best 3½ fathoms. The Mount and the land near Point del Indio, are sometimes visible at the same time.

POINT DEL INDIO, is in lat. about 35° 16′ S. and 0° 56′ W. of the Mount Video, from which it bears true S. 63° W. distant 50 miles. There is little more than 3 fathoms at the distance of 10 or 11 miles off shore, when the river is in a *mean state;* farther to the southward, and off Point Piedras, there is only that depth 14 or 15 miles off shore. Very great caution therefore is required in approaching it, and a constant look-out should be kept for the land, as it is very low, and cannot be seen farther than 12 or 13 miles from the deck of a frigate, in clear weather. Point del Indio.

When the land is barely raised to an eye 19 or 20 feet above the surface of the water, a W. N. W. magnetic course will lead along shore, between it and the south part of the Ortiz, which is distant about 14 miles from it; and between them there is *no where* more water than 3½, but mostly 3¼ fathoms. With a high river, I have had 3¾ fathoms: the nearer the Ortiz, the deeper the water.

In steering up W. N. W. with the land seen from the deck, if clear weather, you will have 3½ or 3¼ fathoms, (yet if the river is low, perhaps some casts of *three fathoms,*) and raise a remarkable clump of trees called Embudo, which are much taller than the rest, highest at the *west* end, and lie in lat. 35° 06′ S., and in lon. 1° 16′ 30″ west of the Mount Video, or 0° 57′ 30″ east of the cathedral of Buenos Ayres. At some distance to the westward of the Embudo Trees, there is another clump about the same height, but these being highest at the *east* end, are sufficiently distinguished not to be mistaken for the *true* Embudo. Embudo Trees.

When in 3½, or 3¼ fathoms, the Embudo Trees bearing by compass W. S. W., the S. E. end of the Chico Bank will bear W. N. W. or thereabouts, 10 or 11 miles: you must now determine from the water your ship draws, the direction of the wind, and state of the weather, whether you will pass between the Chico Bank and the shore, or between the Ortiz and the Chico.—I have passed up and down several times between the Chico and the south shore in the Nereus, lightened in her draft to 18 feet 3 inches, but I would never attempt it again from *choice*, now I am better acquainted with the middle channel between the Chico and the Ortiz, and have every reason to believe that the *middle ground*, some charts lay down in it, does not exist.

A ship not drawing more than 15 feet, may take either passage; and ought perhaps to prefer that to the southward of the Chico Bank, particularly if the wind be well to the southward, as she might take her soundings from the *weather* shore, and keeping in somewhat more than her own draft, run up along it; and by not deepening above 3 fathoms, would ensure being to the southward of the Chico.

Chico Bank. The S. E. end of the Chico Bank, bears from the Embudo Trees N. 32° E. *true*, distant 10 miles, and E. 9° N., 13 miles from Atalaya Church. Its latitude *there* is 34° 56′ 30″ S., and lon. 1° 09′ W. of the Mount Video. This bank runs in the direction of N. 52° W. true, or N. 65° W. by compass, about 13 miles to its N. W. end, which is in lat. 34° 48′ 50″ S., and 0° 47′ east of Buenos Ayres' Cathedral. From this N. W. end in 14 feet water, Atalaya Church bears S. 14° W., distant 11 miles; and Point Santiago, forming the Ensenada de Barragan, bears W. 4° N. distant 14 miles from it. The breadth of the Chico does not exceed 2 miles, or perhaps 1½ mile, and its *inner* edge is about 9 miles from the shore. The water between it and the shore is no where more than 3½ fathoms, and the deepest water is along the inner edge of the shoal, at the distance of ½ a mile from it, or less in some places. About midway between it and the shore there is 2¾ fathoms. On some parts of the Chico there is very little water, and within the limits I have assigned to it, no where more than fourteen feet. There *was* for some years, the mast of a vessel called the Pandora, which was wrecked on this shoal in lat. 34° 54′ S., about 5 miles from its S. E. end, which proved an excellent beacon to guide ships passing it on either side; but it has disappeared. It is very necessary that *three* buoys should be placed on this *dangerous* shoal, to mark its centre and each end.

Point St. Jago. To ships drawing *less* than 15 feet, it is only further necessary to recommend care and attention on approaching Point St. Jago, which forms bushy and distinct; and when it is brought to bear to the south-westward, haul out into the stream of 3½ fathoms, to round outside the *Spit*, which runs about N. W. by compass from Point St. Jago at least 10 or 11 miles; its extreme point, in 2 fathoms, being about 5 miles from the shore. When two remarkable trees on Point Lara are brought to bear S. by E. ½ E., or S. S. E. by compass, you are past the Spit. This mark, will also lead a ship of that draught of water, clear to the westward of the Spit, in running in towards Ensenada.

After passing the Spit off Point St. Jago, in 3½ fathoms, a W. by N. Northerly course by compass, will lead up to the outer road of Buenos Ayres, where any ship may safely anchor in the water she draws, if the river is low.

To sail between the Ortiz and Chico Banks. Frigates, or any vessels drawing more than 16 feet water, should barely raise the land about Point del Indio to the eye on deck, and borrow nearest the Ortiz: more particularly when the Embudo Trees are brought to bear as far as S. W. by W. (magnetic;) for with the Embudo bearing from S. W. to S. S. W., the bottom is flat, off to *three fathoms*, full 7 miles from the shore, and chiefly *hard* clay. Therefore, when the Embudo Trees bear W. S. W. by compass, and you are about 9 or 10 miles off shore in 3½ fathoms, if you have a leading wind haul N. W. by W. or more northerly, as may be required to clear the S. E. tail of the Chico, and you will soon deepen your water to 4 fathoms, and more, in the *middle channel*, between the Chico and the Ortiz Shoal. The fair course through between them, is *about* N. W. by W. ½ W. (magnetic) and in mid-channel, the land can but just be distinguished from the quarter-deck of a frigate. When the Embudo Trees bear S. 20° W. by compass, you will be abreast of the S. E. end of the Chico, and may either take your shoal soundings along its northern or outer edge, to about 3¾ fathoms, if the wind is southerly, or if the wind be northerly, or easterly, borrow into a convenient depth along the southern edge of the Ortiz.—I believe the breadth of this middle channel may be 5 or 6 miles, the depth of water from 4 to 5½, and even 6 fathoms in the fair-way about the N. W. part of it, and abreast *that* end of the Chico. The quality of the ground all the way through this channel, is generally soft mud, fit for safe anchorage.

The N. W. pitch of the Chico Bank being passed, and the depth of water 5 or 5½ fathoms, you may steer by compass W. by N. ½ N., or W. by N. for Buenos Ayres, taking care not to shoal under 3¾ off Ensenada, till Point Lara Trees bear S. S. E. A little more than half way from Point Lara to Buenos Ayres, there are two other remarkable trees.

Anchorage at Buenos Ayres.

When moored off BUENOS AYRES, in the Nereus in 19 feet water, soft mud bottom, these trees bore by compass S. 17° E., the Cathedral S. 67° W., and the spire of the Recoleta Convent S. 76° W.: the lat. observed was 34° 34′ 30″ S., and the lon. by the moon 58° 02′ W. of Greenwich, at the distance of 8 miles from the Cathedral. Variation of the compass 12½° Easterly in 1813.

Geo. site.

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# *DIRECTIONS to SAIL from the COAST of BRAZIL, toward the CAPE of GOOD HOPE;*

## ISLANDS NEAR THIS ROUTE.

DURING most months of the year, the south-east trade fails about the southern tropic, or 2 or 3 degrees beyond it, where the wind is found to veer from eastward to north-east and northward; the northerly winds prevail more than any other in the vicinity of the south-east trade, and as far as lat. 34° or 35° S. from the coast of Brazil to the meridian of London, or a little farther eastward. When therefore, a ship departs from the Brazil coast, or has got to the southward of the south-east trade, she will most probably, in almost every month in the year, meet with brisk winds veering from N. E. to N. W. and sometimes to W. and W. S. W., which will carry her quickly to the eastward. These variable winds keep mostly between north-east and north, attended with smooth water and fine weather.* A ship, by running to the eastward in the track of these winds, gradually increasing the latitude as she proceeds, will often make greater progress than by going to 38° or 39° S. lat. in search of westerly winds. Although, here, the westerly winds prevail during most months of the year, they are often very unsettled—completing a revolution round the horizon, coincident with the course of the sun, every 2, 3, or 4 days, with intervening calms, particularly when the wind is from the south-west quarter. It seems, therefore, inexpedient to increase the latitude more than 35° S. till a ship has reached the meridian of London; she may then gradually proceed into 36° or 37° S. as she approaches the Cape, for the southerly winds which prevail around the Cape land from January to April, (and at times in other months) extend far to the westward. In February and March, these southerly winds are frequently experienced between the Cape and the meridian of London, on which account it is prudent for a ship bound to it, in this season, to increase her latitude to 35° or 35½° S. when she draws into east longitude. She ought then to keep in about 35½° S. if possible, till the Cape is nearly approached, to prevent being driven to the northward of Table Bay by the southerly winds.

Northerly winds prevail contiguous to S. E. trade.

Favourable for running eastward.

In 19° S. the winds are variable and revolving.

Southerly winds near the Cape land,

render it prudent not to fall to leeward.

* When cloudy weather accompanies these northerly or north-west winds, there is a risk of a sudden shift to south-west or south. This happened to H. M. S. Bristol, to the Queen, and to us, in the Anna, in January 1800. We were in lat. 31° S. lon. 22° W. had run 230 miles the preceding 24 hours, and with steering sails set, were running at the rate of 10 or 11 miles per hour, when at 9 P. M. in a shower, the wind shifted from N. W. to S. S. W. in an instant, taking us aback; we lost all the light sails and booms, and the ship's head was thrown round against the north-west sea, before the sails were trimmed, which made her plunge bowsprit and forecastle under.

We were to touch at Table Bay, to fill up our water in the Carron, in 1798, and crossed the meridian of London January 18th, in lat. 34° 50′ S. The N. W. winds continued 1 day afterward, placing us in lon. 2° 50′ E. then in lat. 34° 44′ S.; a calm followed, and was succeeded by a southerly wind, which continued variable between S. S. W. and S. S. E. with cloudy weather and a high sea, till we made the land on the 27th. It was at times squally, and brought us under double reefs, which with the scant wind, forced us daily a little to the northward, although we experienced no lee current till the day we made the land at Dassen (or Coney) Island; had that day 25 miles of current to the northward. Distant 2° from the land, we had a strong westerly current; distant 1°, it set north-westerly: and close in shore, in soundings, from 17 to 50 fathoms between Dassen Island and Table Bay, there was a strong eddy current to the southward, with which we worked to Table Bay in 30 hours. The Polyphemus, with Admiral Murray's flag on board, fell also to the northward of Table Bay in 1807, having made the land at Dassen Island with a southerly wind on the 10th March, in a thick fog, by the help of soundings.

On edge of bank, the current northerly and north-westerly.

Close in shore southerly.

From December to April, if it is not intended to touch at the Cape, a ship should get into lat. 37° or 38° S. about the meridian of London, and keep between 37° and 39° S. in running down her easting; for the winds will be found as favourable for this purpose in 38° or 39° S., or probably more so, than if she were in a higher latitude. In passing the Bank of Cape Aguilhas, the stream of current setting westward ought to be avoided, by keeping at least in lat. 37° S., and she should not go to the northward of this parallel in running down her easting, after passing the Cape, or she may be greatly retarded by the south-easterly winds which prevail in these months to the northward of 35° or 36° S. lat.

To sail past the Cape bank.

SAXEMBURG, a high island of doubtful existence, said to have been discovered by a Dutch ship of this name, in 1670, is generally placed in the charts in lat. 30° 45′ S. and lon. about 19° W. Several navigators have seen the appearance of land near this situation, whilst others have searched in vain for Saxemburg Island. The American sloop Columbus, is said to have passed close to this island on the 22d Sept. 1809, and made it lie in lat. 30° 18′ S. lon. about 28° 20′ W.

A whaler is said to have wooded and watered recently at this island, and made the watering place, situated at the S. E. part of it, in lat. 30° 43′ S. lon. 20° 50′ W., the water very good, descending from the cliffs of rocks.

General Beatson, late Governor of St. Helena, communicated a drawing of the Island Saxemburg, represented with a peak at the N. W. part, and sloping down with trees covering the S. E. part, accompanied by the following description.

'Saxemburg Island was seen on the 8th of September 1808, by Captain Long, of the Brothers, who made it in lat. 30° 20′ S. lon. 28° 20′ W. It is from 60 to 80 feet high, bluff at the N. W. extremity, sloping low to the S. E., being about 4 leagues in length, with a low sandy shore, and trees scattered within a ¼ mile of the sea.

This account, copied from the log-book of the Brothers by Captain Cowam, who commanded the Camperdown cutter at St. Helena.

Notwithstanding these descriptions, the existence of Saxemburg Island seems very doubtful, as many navigators have searched for it in vain, and I have twice myself endeavoured to see it, by steering east on the parallel commonly assigned to it. If an island moderately elevated, were situated in this part of the southern Atlantic Ocean, it ought certainly to have been seen often since the year 1670, by many navigators; as probably every mile, or even every half mile of this part of the ocean, has been furrowed over by the keels of ships since that period.

Tristan d'Acunha.

TRISTAN D'ACUNHA GROUP, consist of 3 islands, the largest and northernmost being named after the Portuguese discoverer, Tristan d'Acunha, was settled by 3 Americans

in 1811, with the view of preparing seal skins and oil, to dispose of to vessels which might touch there: but they seem to have left it when H. M. S. Semiramis was there in 1813.

This island is about 6 or 7 miles in extent, or 20 miles in circuit, of square form, being the base of a mountain, which terminates in a peak elevated 8326 feet above the sea, sometimes covered with snow, when the sun is in the northern hemisphere, and may be seen at 30 leagues distance.

From the west point of the island, breakers appear to project about 2 cable lengths, but the shore is bold to approach in other parts. At the north side of the island, the land rises perpendicularly 1000 feet or more from the sea, then ascends with a gentle acclivity to the base of the Peaked Mountain, which rises majestically over the Table Land. This island, like St. Helena, is formed of abrupt hilly ridges, with chasms or deep valleys between them, and seems to be of volcanic origin. The trees which grow on the sides of the ridges, are small, with spreading branches hanging near the ground, but burn well.* Wild celery, wild parsley, and sorrel, grow plentifully; and wild goats, and wild hogs, are found in the interior.

The cascade, or watering place, is about the middle of the north side of the island, where the water is excellent, and the landing easy on the east side of it, at 4 cable's lengths distance, upon a beach of round pebbles.

There is anchorage near the cascade, in from 20 to 30 fathoms, from ½ a mile to 1 mile off shore. H. M. ship Lion, anchored there 31st Dec. 1792, in 30 fathoms black sand and slime, off shore 1 mile, a small rock off the west point of the island bearing S. W. by S. just open with the western extremity, and the cascade of water falling on the beach S. by E. And by correct observations, and chronometers, her anchorage was found to be in lat. 37° 6′ S. lon. 11° 43′ W. Variation 7° West.

By mean of the chronometers and observations of 8 East India ships, the Peak of Tristan d'Acunha is in lat. 37° 6′ S. lon. 11° 44′ W.: but Capt. Heywood, who touched here in H. M. S. Nereus, on the 5th and 6th January 1811, made the waterfall or cascade in lat. 37° 6′ 9″ S. lon. 12° 3′ West by chronometer, measured from Rio Janeiro. Geo. site.

It is remarkable, that this longitude by mean of 8 ships, corresponds so nearly with the observations taken in the Lion; whereas, Capt. P. Heywood, made the cascade in lat. 37° 6′ 9″ S., and the lon. 12° 3′ W. by good chronometers, in a short run from Rio Janeiro. Mr. Fitzmaurice, was at Tristan de Acunha in H. M. S. Semiramis on the 5th of March 1813, and by observations taken on shore at the cascade, he made it in lat. 37° 5′ 36″ S. lon. 11° 57′ 45″ W. by chronometers measured from the Cape of Good Hope: on a second cruize in the same ship, on the 15th Nov. following, he made it in lon. 12° 2′ W. by chronometer from the Cape of Good Hope, and in 12° 7′ W. by lunar observations. The mean of Mr. Fitzmaurice's observations makes the cascade of Tristan de Acunha in lon. 12° 2′ W., corresponding within a mile of Capt. Heywood's observations, I am, therefore of opinion, that the longitude of this island, ascertained by these two intelligent and correct navigators, is much nearer the truth than the preceding longitude assigned to it.

The variation of the compass in 1811 was 9° 20′ W., and in 1813, it was 9° 51′ W. by Mr. Fitzmaurice's observations.

Good water is got with great ease from a small lake at the east side of the bay, which is supplied by falls from the mountains: the casks may be thrown into the sea well bunged, and the surf will wash them on shore; when filled at the lake, they must be rolled about 130 or 150 yards over a soft sandy beach, hauled off by a line to the boats at anchor, and hoisted in by a mast or stump, fitted for this purpose. The Semiramis filled 75 tons of water in this manner in Nov., sending the boats on shore in the mornings, and hoisting them in at night, the ship keeping under sail. But when the wind is at southward, a ship will be enabled to fill Watering Place.

* Probably the Gum tree, which is indigenous here, at St. Helena, and Gough's Island.

up her water more speedily by anchoring, and if it should veer to the northward of west, she ought to put to sea immediately, as the surf will then rise upon the shore, and it would be dangerous to remain at anchor with a N. W. or Northerly wind. The water cannot be rafted off, on account of the sea-weed surrounding the island. There is a rise and fall of tide, about 8 or 9 feet at times.

The shores of this, and the adjacent islands, abound with seals and sea lions, and are fronted by strong sea-weed, which is seen floating on the water in their vicinity, and patches of it extend to a considerable distance.

Easterly winds seldom continue longer than 24 hours at a time near these islands; but they mostly prevail between S. W. and N. W., with storms from N. W. in winter.

Inaccessible Island; geo. site.

INACCESSIBLE ISLAND, bearing by compass from Tristan d'Acunha, S. 67° W. dist. 19 or 20 miles, is the middle, and the westernmost of the group, situated in lat. 37° 17′ S. lon. 12° 22′ W. or 7 miles more west than Tristan d'Acunha, being about 9 miles in circuit, and may be seen about 16 leagues distance. It is level and barren, with only a few scattered shrubs on it; the Semiramis' boat landed at a small pebbly beach, of which there are several small spots, with the mountain rising perpendicularly over them.

There is no danger, only a rock like a boat under sail, is visible at the S. E. point: soundings are got within a mile of the N. E. point, and 20 fathoms black sand with small reddish stones, when the body of the island bears west. Several streams of water issue from the top of the mountain.

Nightingale Island. Geo. site.

NIGHTINGALE ISLAND, the smallest and southernmost of these islands, bearing by compass from Tristan d'Acunha S. 33° W. distant 18 miles, is in lat. 37° 26′ S. lon. 12° 8′ W., being about 6 or 7 miles in circuit, having two rocky islets off the N. E. point, and some at the south point. On the east side there are soundings, and when the middle of the island bore W. S. W. Mons. D. Etchevery anchored in the L'Etoile du Matin, Sept. 1767, in 33 fathoms, coarse brown and reddish sand. The boat found some difficulty in reaching the shore, on account of strong sea-weed twined together, and after a landing was secured, the interior could not be penetrated for reeds, and the shore was covered with Penguins and eggs. The boat of the Semiramis, landed here in 1813, and found plenty of fresh water, sea elephants, and seals.

These islands are not unfrequently seen by ships which haul far to the southward after leaving the S. E. trade, with the view of getting strong westerly winds.

Gough's Island. Geo. site.

GOUGH'S ISLAND, OR DIEGO ALVAREZ, has been seen by several East India ships, at various times, and by a mean of the observations and chronometers of 9 ships, its centre is situated in lat. 40° 19½′ S. lon. 9° 41¼′ W. Capt. Heywood, in H. M. S. Nereus, visited it on the 8th January 1811, and made it in lon. 9° 45¼′ W. or 2° 18′ East from Tristan d'Acunha by chronometer. Variation 10½° West.

This island is about 5 or 6 miles in extent, or 15 or 16 miles round, elevated about 4385 feet above the sea; its surface is covered mostly with a light coat of mossy grass, and some of the small bushy trees may be observed, which abound on Tristan d'Acunha.

The steep cliffs rise almost perpendicularly from the sea, having several beautiful cascades of water issuing from the fissures between them. The boat landed with safety at a cove on the north side of the island, just to the eastward of one of the rocky islets that adjoin to it on that side.

The Church Rock, resembling exactly a church with a high spire on its western end, is situated near the N. E. point of the island; and to the southward of this rock, on the east side of the island, lies an islet near the shore, within which, the landing is safe and easy, being protected by the N. E. point from the swell and northerly winds. Here some men re-

sided belonging to the American ship Baltic, which ship the Nereus left at Tristan d'Acunha: these men had been rather unsuccessful during a long stay on Gough's island, most of the seals having deserted it, but they procured plenty of fish, and birds of good flavour for subsistence, by lighting a fire upon one of the hills in the night.

Between the islet and the S. E. point of the principal island, there seemed to be a small bay or cove, where the Americans said a ship might anchor in safety, about ½ a mile off shore, in about 20 fathoms sandy bottom, tolerable holding ground. H. M. S. Semiramis visited this island in Dec. 1813, and found none of the Americans there, but several had been buried, by inscriptions placed at the burying ground; three boilers for boiling oil, and a quantity of salt for curing skins, were also discovered.

# *CAPE of GOOD HOPE.*

## DESCRIPTION OF THE BAYS, AND THE COASTS IN ITS VICINITY, WITH SAILING DIRECTIONS.

ST. HELENA BAY, on the west coast of South Africa, is formed on the west side by St. Martin's Point or Cape, situated in lat. 32° 40′ S. lon. 17° 55′ E., which is a low point projecting out from the high land on the west side of the bay. Cape Deseada is a high bluff head-land, about 7 leagues N. E.ward from the former, and bounds the N. E. side of the bay, which stretches from St. Martin's Point in a S. E. direction, being about 4 or 5 leagues deep, with regular soundings from 12 or 10 fathoms, to 6 and 5 fathoms near the shores of the bay, the bottom mostly sand and shells. St. Helena Bay. Geo. site.

Berg River, a small stream, falls into the bottom of the bay, having some springs near it, and a few houses on each side.

In summer, the anchorage is safe, as southerly winds then prevail; for this bay is only open to those winds which blow between north and west. During winter, when N. W. gales render Table Bay unsafe, St. Helena Bay is also unsafe, for these gales extend sometimes to the northward of this bay. The variation here was 23° 40′ W. in 1809. High water at 2 hours 30 minutes on full and change of moon. Near 3 leagues to the southward of St. Martin's Point, there is said to lie a sunken rock 4 miles off shore. The Dutch used to have a resident at this bay to collect grain.

SALDANHA BAY entrance, in lat. 33° 6′ S. is about 16 or 17 leagues to the N. N. W. of Table Bay, having at its mouth the two islands Jutten and Malgasen lying north and south of each other, between which is the proper passage; and Marcus Island situated a little farther in, may be passed on either side. Saldanha Bay.

In running for this bay, you cannot easily miss it, if certain of your latitude, although the islands at the entrance are low, and so near the main, that they are not easily discerned, unless a trusty person be stationed at the mast-head. Marcus Island may be approached on all sides within ¼ a cable's length, but the widest passage is to the south of it, and the best with a southerly wind; for in the summer, if you wish to anchor to the southward, in order to sail out with a S. E. wind, you will be able to fetch your anchorage; or if you run into Hoetjes Bay, you will have plenty of time to take in sail before you anchor. Directions.

The best anchorage in Hoetjes Bay, is in 6 fathoms, with the natural granite pier on with Marcus Island bearing S. by W., where ships of all descriptions are completely sheltered. Hoetjes Bay.

Capt. Cramer examined Saldanha Bay in H. M. sloop Rattlesnake in Nov. 1802, and describes it as follows.

Description of the channels and dangers.

Between Jutten Island and the main, there is a safe passage, with from 7 to 11 fathoms sand and broken shells; both the shore of the island and the main may be approached within 100 yards, but to anchor, keep twice this distance from either, or you will have foul ground.

There is also a passage between Malgasen and the main, with from 10 to 20 fathoms foul ground, and several sunken rocks lie a full half mile off the N. W. end of the island; which, together, with a heavy swell always setting into this passage, and being destitute of clear ground for anchorage, renders it unsafe, without a leading wind.

In the principal channel between the islands Jutten and Malgasen, you will not have less than 13 fathoms sand. Marcus Island, as well as the north and south points of the main land, are bold to, there being 6 or 7 fathoms clear ground within 50 fathoms of this island, but when approached within about 50 yards, you will have 7 fathoms foul ground; the same from the island to the north point of the main land which forms Hoetjes Bay, off which, about a cable's length, lies a rock not larger than a small boat, dry at low spring tides.

Hoetjes Bay is on the larboard side of the entrance, having regular soundings in it of 4 to 5½ fathoms sand and shells, till you open the passages, when the water deepens to 7, 8, 9, 10 and 11 fathoms. North-west from the point that forms this bay, lies a sunken rock of considerable extent, called the BLINDER CLIP, not visible even at low tide when there is 3 feet water over it, unless the wind blows strong. The distance from this rock to the sandy beach of the main, is better than a mile, with from 4 to 7 fathoms sand and broken shells. The mark for the Blinder Clip, is Marcus Island and the Mouse-Back in one, the latter being a piece of high land on the northern shore.

In working up from Hoetjes Bay, to the head of Saldanha Bay, the starboard shore was found to be bold to, till within 1½ mile of Schapen (Sheep) Island, as a bank commences at this island, and terminates at the north point of a small bay farther down, being of a triangular form, with the point out from the shore called Salamander Point, and having on it irregular soundings from 5 to 3½ fathoms.

On the starboard side the soundings are regular, 3½ and 3 fathoms till within half a mile of the beach. Adjoining to Schapen Island in a northern direction, lies a small isle, with shoal water 2½ fathoms about a mile off the island, and the soundings on it are very irregular, not exceeding 6 or 7 feet in some places: between this and the eastern shore of the main, there is a good channel up to Melvill's, or to the Old Post-House up the Lagoon.

In working up to Schapen Island, keep your lead going, as the soundings to the N. E. ward are regular, and will be your best guide; but in standing back to the S. W., get the N. W. end of Schapen Island in one with the Saddle Hill up the Lagoon, and then put about, as the water shoals quick afterward.

Bevian Bay, is well sheltered from the N. W., but having much foul ground about it, Hoetjes Bay is far preferable, from whence at all times, ships may work out.

We found the water very scarce, having to send our launch up the Lagoon for it, which was found to be very good, but they cleared the well every time. Upon the high hill called Whitter Clip, about 5 miles distant, we were told there was plenty of good water to supply a large fleet, if it could be brought down.

The marks for mooring at the head of Saldanha Bay, are the Mouse-Back shut in half a cable's length with Salamander Point and the S. W. point of Schapen Island, distant from the latter 1¼ mile. Here you will have from 4¼ to 5¼ fathoms sand and shells, with plenty of room to swing clear of the banks, should you part one cable.

Refreshments.

Bullocks and sheep may be got from the farmers in the neighbourhood at a moderate price, and plenty of fish may be caught either with the net, or with hook and line: Reets Bay is the best place for the net or seine, having only 6 or 7 feet water, sandy ground; the other

places being rocky, are only fit for the hook and line. The islands mostly swarm with wild rabbits.

In Hoetjes Bay, it is high water at 2 hours on full and change of moon, rise of tide from 6 to 7 feet.

This is an excellent harbour, for ships to repair any damage they may have sustained by stress of weather at sea. The Thames, bound to Bencoolen and China, when near the Cape of Good Hope early in May 1812, found her bowsprit badly sprung, and not being able to get round the Cape to Simon's Bay, she bore away for Saldanha Bay, and secured her bowsprit there, in a few days stay. The water was brackish, and in small quantity at this time, all round the coast about the bay.

Dassen Island.

DASSEN, OR CONEY ISLAND, is in lat. 33° 24′ S. about 6 leagues southward from the entrance of Saldanha Bay, and 9 leagues N. N. Westward from Robben Island. It lies about 4 or 5 miles from the shore, is a low sandy island, dangerous and rocky on the W. side. When we tacked 4 miles from the W. part of it, in 17 fathoms sand, the sea broke over a sunken rock, distant $1\frac{1}{2}$ mile from the S. W. end of the island. The S. side is also said to be rocky, but there is anchorage within it. If the lead is kept going, there is no danger running in for the land hereabout in the night, as there is 17 fathoms about 2 miles outside of the foul ground about this island. Between Dassen Island and Table Bay, the water has a black stagnated appearance. At 2 or 3 leagues distance from the shore, we found an eddy current setting to the southward; when a little to the westward of the bank of soundings it set N. Westerly. This part of the coast is of moderate height, barren and sandy near the sea; the interior is higher, and seems a better soil.

Soundings to the northward of Table Bay.

Should a ship, in running for Table Bay, be driven to the northward of it, by strong southerly winds in the summer season,* the soundings are a safe guide in approaching the land, if the lead is not neglected: between Saldanha and Table Bays, regular soundings extend out from the land several leagues.

In lat. 33° 30′ S. and 41 miles W. from Cape Town by chronometers, there are 110 fathoms. From Dassen Island to Penguin, or Robben Island, the depths are from 50 to 56 fathoms about 5 leagues off; from 20 to 22 fathoms 3 or 4 miles from the shore; and about 30 fathoms 10 or 11 miles to the N. Westward of the latter island.

Land near Table Bay.

TABLE BAY, is so remarkable that it cannot be mistaken, by the contiguous high land, which appears like an island when seen at a considerable distance from sea.

The highest part, from which the bay takes its name, is situated right over Cape Town, at the S. part of the bay, and is called the Table Mountain. It is about 3,500 feet high, level on the top, and falls down nearly perpendicular at the E. end till it joins the Devil's Mount, which is a rugged peaked mountain, nearly as high as the former, and separated from it by a small gap. The W. end of Table Mountain is also nearly perpendicular from the top to a considerable distance, and then has an abrupt declivity, till it joins the base of another mount called the Sugar Loaf or Lion's Head; which is about 2,100 high. Near the summit of this rocky conical mount, there is a spring of good water, and a flag is generally displayed on it when a ship appears, although in some places it is so steep, that it can only be ascended by steps cut in the rock. This is joined on the N. side by an oblong mount about 1000 feet high, called the Lion's Rump, from a supposed resemblance these contiguous mountains have to this animal. The Lion is on the W. and S. W. sides of the bay, as the

* To the westward of the Cape, in the summer months, the atmosphere is at times remarkably clear; the planet Venus, and even Jupiter may be often seen at mid-day. About 1° W. from Table Bay, at 2 P. M. Jan. 27th, 1798, when the altitude of the sun was about 55°, then shining bright, I observed the latitude very correctly by the planet Venus on the meridian. This luminary was bright, and distinctly visible to the eye without the assistance of a telescope during most part of the day.

Table Mountain, and the Devil's Mount, are on the S. side. On the E. side of Table Bay, and of these mountains, the low sandy isthmus between Cape Town and False Bay is formed. The land is high and uneven, from Table Mountain to the extremity of the Cape of Good Hope.

Strong S. E. & E. S. E. winds in Table Bay.

When the Table Mountain, in the summer months, begins to be covered with a white cloud, it indicates a strong S. E. or E. S. E. wind. In January, February, and March, these winds blow sometimes with great fury over the Table and Devil's Mount, and through the gap between them, driving the white clouds in rolling fleeces like wool, over the perpendicular sides of the Table Mountain, curious to behold; ships ought, therefore, to moor with good cables, for they are liable to drive, and bring both anchors a-head. I have known several ships driven from Table Bay by these south-easters, with all their anchors down; and did not regain the anchorage till after 5 or 6 days. When the Table Mountain is free from clouds, the S. Easter will be mild, and a gentle sea-breeze then generally blows in on the W. side of the bay, when there is a fresh S. E. breeze prevailing from the E. side of it, half-way across, during most of the day.

Prevailing winds at this Bay, & near the Cape.

The prevailing winds at Table Bay, and near the Cape of Good Hope, are from S. E, and southward during summer; the S. E. winds blowing more or less in every month of the year, and generally bring settled weather. These winds, extend more than 200 leagues to the eastward of the Cape. N. E. winds are less frequent than any, and never contiuue long. In May, June, July, and August, the W. and S. W. winds blow strong, attended often with fogs and cloudy weather; but the N. W. winds are most violent in these months, frequently blowing in severe storms for several days together, with a clouded sky, and sometimes accompanied with lightning, hail showers, or rain. These winds extend as far as 27° S. lat. in the track from the Cape towards St. Helena, and prevail far to the westward, but much farther to the eastward of this promontory, although they are generally most violent near the land.

Summer is the proper season, for anchoring in Table Bay.

The summer is from October to April, in which season it has been thought safe for ships to lie in Table Bay, notwithstanding, H. M. S. Sceptre, and several other ships were wrecked by a severe N. W. storm, in November, 1799. These N. W. gales are occasionally experienced about the Cape, in every season of the year; but they seldom blow home in Table Bay, from November to May; and although several ships have been driven on shore by them, more than once in April, the Dutch fixed on the 10th of May, as the period for all ships to leave this place; the strong N. W. winds being then daily expected. Such a mountainous sea is forced into the bay by some of these N. W. gales, that it is almost impossible for any ship to ride safe.*

Dangerous there, in N. W. winds

Although an eddy current may be setting along shore to the southward, from Dassen Island to Table Bay, the regular current at the same time, often sets round the Cape to the N. Westward, as far as the high land on the west side of the bay; ships should, therefore, endeavour to make the land to the southward of the entrance, if bound into Table Bay, particularly if the wind incline from the S. W. or southward. From the Cape of Good Hope to Table Bay, the shore is mostly steep, and may be approached within 1½ or 2 miles distance, in sailing along towards Green Point, which is low, and the northern extremity of the peninsula. About 3 leagues south from this point,

* In cases of exigency, ships put into Table Bay in the winter months, notwithstanding the risk of N. W. gales; and the early navigators to India, seem often to have touched there for refreshments, in that season. About 2 centuries back it was called Soldania Bay.

The Hector lay in Table Bay, from the 15th of June, to the 4th of July, 1614, and made the variation 0° 35′ W., and the Watering-Place, in lat. 33o 54′ S., which is very near the truth, considering the imperfection of instruments, and tables of the sun's declination, at that period. In the 17th century, East India ships, both Dutch and English, frequented Table Bay at all times of the year, to procure refreshments, on their voyages to, and from Europe.

HOUT BAY, is situated at the N. end of an excavation in the land. It is said, this bay can afford shelter from all winds, to a small number of ships; but it is rather confined, and has a reef of rocks at the entrance. A ship in passing the points which form this bay, should keep 1½ or 2 miles from the land, to give a birth to some straggling rocks detached from the shore; and she may keep about the same distance from it, till she reach Green Point, to avoid some rocks at a small distance from the shore, between the Sugar-Loaf and that Point. Most of these rocks are above water, and within half a mile of the shore; the depths of water about 1½ or 2 miles off, are from 50 to 60 fathoms.

Hout Bay. Directions for sailing to Table Bay.

PENGUIN ISLAND, is low and flat, distant about 5 miles from Green Point to the northward; the point may be approached near, the soundings being regular towards it, but the island must not be passed nearer than 2 miles, on account of a sunken rock called the WHALE, about 1½ mile distant from its south extreme, on which the sea breaks when there is much swell; at other times, it is not perceived.

Penguin Island.

A ship may borrow on Green Point, to 10, 9, or 8 fathoms without danger; then steer towards the shipping in the road, in 8, 7, or 6 fathoms, regular soundings.

In the fair weather season, regular sea-breezes from S. W. and W. prevail in the mornings, which continue till noon, or longer; these are followed by strong S. E. winds from the land, which blow fresh during the afternoon, and frequently till the following morning; then the sea-breeze returns.

Land and sea breezes.

The S. Easter sometimes comes from the land with great fury; it is therefore prudent to take a reef, or two, in the topsails, before a ship has reached Green Point, if near or a little past noon. By neglecting this precaution, I have seen ships rounding the point with all sail set in a light breeze, then suddenly meet the fiery south-easter on opening the bay, which compelled them to let fly every thing, to save their masts; and one of these ships, whilst the people were aloft securing the topsails, nearly ran on shore on the east side of the bay, in waring.

The south-easters blow very strong.

If abreast of Green Point, a ship should meet with a fiery south-easter, and be unable to work to windward, she ought to bear away and anchor under Penguin Island, taking care to keep at 2 miles distance from the S. and S. W. sides of it, to give a birth to the Whale, and a reef projecting from the S. W. end of the island.* She may anchor off the north end, about a large ½ mile from it, in 9 or 10 fathoms; but the N. W. end must not be approached very close, as the reef extends near half a mile out here; and it is said to project about 1 mile from the S. W. and S. E. ends of this island.

Anchorage under Penguin Island.

I have known the south-easters blow so strong, that a ship could not bring up under Penguin Island, but was driven to sea till the violence of the wind abated. Should a ship not anchor under that island, she may make short tacks to the southward of Green Point, under lee of the High Land, until the violence of the S. Easter is abated, and this seems preferable to the risk of losing an anchor, by endeavouring to bring up in a strong gale.

Different channels.

It must be observed, that all ships going *into* Table Bay, should use the channel between Green Point and Penguin Island, but the channel to the northward of this island is most proper for ships bound *out;* for the strong S. E. winds blowing out of the bay, produce an outset, or partial current between the island and the northern shore; whereas, the current frequently sets past Green Point into the bay, to replace the quantity of water driven out by the strong winds along the N. shore.

After working from Dassen Island, in January, 1798, to the entrance of Table Bay, we observed in the morning, that it was calm under the high land in the S. channel; but a steady

* Or if well into the bay, she may run for the channel between it and the main, and anchor in 8 or 9 fathoms, at ¾ of a mile distant from its eastern shore; where she may lie till the morning, when the S. Westerly breezes, will enable her to weigh and run for the anchorage at Cape Town.

light breeze was perceived on the water between Penguin Island and the N. shore. To preserve the breeze, we proceeded to work in, by the N. channel: about 2 P. M. the south-easter came to blow strong, carried away our topsail sheets, and we were obliged to close reef the topsails, when beating through between the island and the main. We found a lee current whilst the wind was strong, and gained little ground until it moderated about 8 P. M. In beating through, we did not stand nearer to the island than 8 fathoms; the soundings were from 8 to 12 fathoms sandy ground, but did not decrease much in nearing the main. From where we tacked on each side, the depths were generally from 9½, to 11 and 12 fathoms across the channel. On the main, three rocky points project a small distance from a sandy beach; near which, several sunken rocks were seen shining under water, distant a quarter of a mile or more from the shore. Near the outermost of these rocky points, we shoaled from 10 to 7½ fathoms at a cast; whilst in stays, I perceived some sunken rocks about 2 cables lengths within us, which render it unsafe to make too free with the shore in this part. The reef placed in the charts, projecting about a mile from the E. part of the island, was not discernible.

N. channel.

Between Green Point and Penguin Island the ground is foul; should a ship be driven by the swell, towards the Whale or Penguin Island in a calm, and obliged to anchor, the stream will be most convenient for this purpose, where the ground is rocky. The proper anchorage in the bay, abreast the town, is sandy bottom; the W. side of it being clear ground all over. In the summer months, a ship may moor in 7, 6, or 5 fathoms, with Green Point N. W. ½ N.; the body of Table Mountain S. W. ¼ S., and the flagstaff on Lion's Mount W. ½ S., off shore from ½ to 1 mile, and from the town 1 or 1½ mile. When N. W. winds are expected, do not anchor under 6 or 6½ fathoms, where the swell runs more regular than in shoal water. At these times, ships should ride with a whole cable, or more, for they are liable to drive if their anchors are not well seated in the sand; and when a ship drives, it is difficult to bring her up, as the anchors scrape along the surface of the sand, and do not take hold, whilst the heavy seas are striking against her. The best ground, is from 5 to 7½ fathoms. When so far out, as to have the Lion's Head in one with, or open to the northward of the Lion's Rump, the ground is rocky quite across the bay.

Anchorage in Table Bay.

Table Bay is an excellent place for obtaining refreshments; the water is good, but wood is very scarce. Sheep are to be had in abundance, at very moderate prices; also other provision of various kinds, and the vegetables and fruits are good. The water is brought down in pipes to the wooden pier, where boats fill it with hoses, leading from the pipes to their casks. The atmosphere about the Cape is generally cool in the night, although the sandy soil is often greatly heated by the rays of the sun: this occasions the land winds which blow out of Table Bay, to come off in hot gusts in the evenings, when their course is over sandy ground.

Refreshments.

In this bay, it is difficult to obtain rates for chronometers on ship board, in the fair weather season; for correct altitudes of the sun cannot be obtained, the refraction is so mutable near the horizon. During seven days stay here, I took nearly 100 sets of forenoon and afternoon altitudes of the sun, to *correct the rates* of 7 chronometers, but did not get their rates very exact. Objects in the horizon at the entrance of the bay, were sometimes reflected double; a picture of a vessel under sail, was seen distinctly in the atmosphere above her, and other objects were reflected in various ways. It is therefore advisable, if a ship remain several days at this place, to take the chronometers on shore, where their rates may be corrected by altitudes taken with an artificial horizon, or in a bason of water when there is little wind.

Refraction at the horizon very changeable.

The latitude of Cape Town, by mean of 6 meridian altitudes of the sun, is 33° 58′ S. lon. 18° 28½′ E. by mean of the observations of different astronomers. The mean of several good chronometers measured 24° 11′ W. from Cape Town to the anchorage at St. Helena, in a run of 13 days, in 1807; this would place Cape Town in lon. 18° 34′ E. allowing James's Town in 5° 36½′ W.

Geo. site of Cape Town.

The tide seldom rises more than 5 feet perpendicular in Table Bay; high-water at ½ past 2 o'clock on full and change of the moon. Ships moor with their anchors about N. W. and S. E.

Table Mountain E. 12 leagues, the var. was 25° 40′ W. in Feb. 1798. } Mean of many morning azimuths,
Ditto....ditto....14 ditto..... 25° 40′.... ditto 1800. } each time by 2 compasses.

Geo. site of Cape Good Hope.

CAPE OF GOOD HOPE, is the southern extremity of the peninsula which separates False and Table Bays from each other, and the terminating promontory of the west coast of Africa to the southward. From Table Bay to this Cape, the land is of considerable height, rugged and uneven, ending in hummocks at the Cape point. The latitude of the extreme point is about 34° 24′ S.* and about 3 miles E. from the meridian of Cape Town, in Table Bay. If the lon. (above) 18° 28½′ E. is adopted for Cape Town, it will place the Cape of Good Hope in lon. 18° 31½′ E.

Bellows Rock.

THE BELLOWS, is a large rock even with the water's edge, about 2½ or 3 miles distant from the true Cape Point, nearly S. by W. from it, true bearing. In 1803, when the Bellows Rock was on with Cape Point, by compass, it bore N. 35° E.; and in one with the western extreme, N. 17° W. the Cape Point *then* bearing N., variation 26° W. On this rock, the sea generally breaks. About 2 miles or more N. E. of this, there is another sunken rock, called the ANVIL, distant about 2 miles from Cape Point; there is a passage between these rocks, and another betwixt them and the land, with soundings from 20 to 7 fathoms, but they are not frequented,† the bottom being rocky, and the current sometimes strong. The Colebrook was lost in August, 1778, on a rock, said to be about 1½ league N. E. Easterly from the Bellows, which had not been known before. By many navigators this is thought to have been the Anvil, the true situation of which seems not exactly known. It is said to bear S. E. by E. from Cape Point by Capt. Fraser; S. E. by the Colebrook's journal, distant 4 miles; Mr. Bligh places it E. S. E. 2 miles, and Capt. Huddart thinks it bears about E. from the same point, variation allowed. There is thought to be 14 feet water on the Anvil Rock, and it is of small extent; it is so differently placed in bearing from Cape Point, that there is reason to think another rock‡ exists hereabout, exclusive of the Anvil. When the Colebrook struck, the Royal Admiral passed within the rock about a mile, between it and the land; before and after striking on it, the former ship had 30 fathoms water.

Anvil and other rocks.

Cape False and Bay.

FALSE BAY entrance, is formed by the Cape of Good Hope on the west side, and Cape False to the Eastward; the latter being a steep bluff, resembling a quoin, which may be seen at 8 leagues distance, and appears to lean over to the west when viewed from the southward: it is called Hang-lip, by the Dutch, and sometimes Hottentot's Point. The entrance of the bay from Cape to Cape is about 5 leagues wide, and these are nearly on the same parallel—Cape False being a little to the southward of the Cape of Good Hope. It extends northward into the land about 5½ leagues, being a large open bay of square form, having several dangers in it, none of which are situated near Cape False, or in the eastern side of the bay.§

* Some navigators make it in lat. 34° 23′ S.

† The Cumberland, with the direct ships for China, under convoy of H. M. S. Doris, 15th June, 1813, at ¼ past 8 A. M. had the Cape of Good Hope bearing N. W. by N. distant ¼ of a mile, with the wind at N. Westward: she then steered into False Bay between the Bellows Rock and Cape Point, keeping about E. by S. in nearly mid-channel, 1½ mile from the Cape of Good Hope.

‡ A master of the navy, who has lately surveyed False Bay, asserts that there are other rocks near the Anvil.

§ At its N. E. angle, there is a small concavity called Gordon's Bay, where a ship might be sheltered from south and easterly winds, in 8 or 9 fathoms water. Pringle's Bay is a sort of cove on the north side of Cape False, not so much sheltered as the former.

Soundings in the entrance of False Bay.

Across the entrance of False Bay, the depths of water are from 40 to 50 fathoms, but a little to the westward of the middle of the entrance, there is a bank of rocky ground, with soundings on it, from 16 to 30 fathoms, having 45 and 46 fathoms within it, and 60 fathoms to the southward.

Directions for entering it.

The middle and eastern parts of the bay, are thought free from dangers, but the ground is foul and improper for anchorage. If a ship, coming from the westward with a N. W. wind, is bound to Simon's Bay, she may pass to the southward of the Bellows Rock at any discretional distance. When abreast of it, at 2 or 3 miles distance, the course ought to be E. S. E. to E. by S. by compass, till she has run 5 or 6 miles; she may then haul up E. N. E. and N. E. taking care not to approach the Cape Point nearer than 5 miles, till it bears W. N. W. by compass; being then to the northward of the Anvil and Colebrook Rocks, she may haul in, within 2 or 3 miles of the western shore, into moderate depths for anchoring.

Description of the land around.

As you enter False Bay, a ridge of rugged mountains is perceived to the northward, which ends at the entrance of Table Bay. The Table Mountain is seen in clear weather, when the distance from it is 60 miles to the southward, and very distinctly from the entrance of False Bay. From Cape False, another ridge of mountains extends to the northward, along the eastern shore, to the bottom of the bay. The space between these ridges is low-land, the mountains seen over it, being at a great distance in the country.

Simon's Bay.

SIMONS, OR SEAMONS BAY, is situated 4 leagues northward from Cape Point, near the north-west corner of False Bay, at the foot of the highest mountain on the coast. From April to September, when Table Bay is unsafe, ships put into Simon's Bay, and in every month of the year, this is considered a place of safety. Although it is open to north-east and easterly winds, which come from the bottom of False Bay, or from the mountains on the coast, these never blow strong; so that it may be considered a safe retreat for 13 or 14 sail of ships, where they will be moored in security at all seasons: but being small, it cannot contain a numerous fleet, sheltered from south-east winds. The ships in this bay, receive refreshments and supplies of provision from the interior, and from Cape Town, distant from hence about 6 leagues; water is conveniently obtained, and is excellent. At a small distance from the south point of the bay, there is an islet or rock, in the form of a barn, called Noah's Ark; about a mile N. N. Eastward from this, a small reef is situated near the water's edge, called Roman Rocks; between these, is the common channel for ships. From Roman Rocks, about 2 leagues to the E. N. E., lies Seal Island, having straggling rocks above and under water near it, some of which extend 2 and 3 miles to the southward, and near 4 miles to the eastward; breakers are always seen when the sea runs high. The Warren Hastings in 1795, struck on one of the southernmost of these rocky patches, whilst in stays—False Cape bore S. by E. $\frac{3}{4}$ E. by compass, Cape Point S. W. $\frac{1}{4}$ W., a high peak at the bottom of False Bay. N. by W., and the ships in Simon's Bay W. by N. $\frac{1}{2}$ N. Ships turning to windward in False Bay, should be cautious not to approach Seal Island nearer than 4 miles on the south side, or 3 miles on the south-west side.

Dangers near Seal Island.

Whittle Rocks.

The danger most in the way of ships working into, or out of False Bay, is the WHITTLE ROCKS, which is an extensive ledge of rocks, nearly a mile in circumference, covered with from 5 to 15 fathoms water, excepting the shoalest spot, which has only from 12 to 15 feet water on it at low spring tides, and appears to be about 6 feet in diameter. It is steepest on the S. E. side; and another rock with 4$\frac{1}{2}$ fathoms water on it, lies south by compass 40 fathoms from the shoalest part of the Whittle Rocks. There are others to the N. W. about a cable's length from it, with 4 and 5 fathoms water on them.

The Trident, Asia, and several other ships, have struck on these dangers.

In October 1811, a beacon was placed N. N. E. 50 fathoms from the shoalest rock, which has since been broken away by the sea. From this beacon, Cape of Good Hope Point bore

by compass S. 51½° W. Outer Smith's Winkle West,—Commandant's House N. 40° W. Noah's Ark N. 35° W. West Point of Fish-hook Bay N. 20° W.—Muyzenberg Point N. 3° W.—Peak of the Devil's Mount N. 5½° E.—Seal Island N. 34° E.,—and the extremity of Cape False S. 33½° E. Variation 28° W.

It lies 4½ miles E. from the north point of Little Smith's Winkle Bay, and about 8 miles from Cape Point. Lieutenant Whittle examined this danger, and found it to be a rocky bank, about a ¼ of a mile broad, on which there is a rock with only 12 feet water over it at low tide. On the 12-feet rock, the angle of Cape False and Cape Point, taken with a quadrant, was 87°, and the summits of two hills over Fish-hook Bay, just touching each other. To avoid this danger, a ship should go to the westward of it, keeping within 2 or 3 miles of the land, in passing between Little and Great Smith's Winkle Bays, taking care in passing abreast of it, that the angle of Cape False and Cape Point is not increased to 85° when measured by a quadrant. Close to this dangerous patch, the soundings are 20 and 22 fathoms. The Francis struck on a spot about a mile to the northward of the Whittle Rocks, but probably the bearings were not correctly taken, and that it was on one of the northernmost of the Whittle Rocks where she struck.

Directions for sailing into False Bay, and to the anchorage in Simon's Bay.

A ship coming into False Bay from the eastward, should steer for the middle of the bay, or for the west side of it, with a S. W. or westerly wind. When the Cape Point bears W. by N. by compass, she is clear to the northward of the Anvil, or other sunken rocks supposed to be situated near the Point, and may then borrow on the western side of the bay, within 2 miles of the shore, or less if requisite. When she is about 6 miles within Cape Point, and abreast the rocky hill over Little Smith's Winkle Bay, she ought not to stand farther from the shore than 3 miles in passing the Whittle Rocks, and should it fall calm, she may anchor in moderate depths near the western shore. Ships may pass to the eastward of the Whittle Rocks, and between them and the reefs to the southward of Seal Island; but the western channel seems preferable for strangers, the land affording them a sufficient guide. After passing the Whittle Rocks, a ship may continue to steer or work along the western shore, at the distance of from 1 to 3 miles; when she approaches Simon's Bay, Noah's Ark will be discerned, which is a level islet near the south point of the bay; but the marks most conspicuous, and seen farthest off, are *white sand downs*, appearing like snow, in the hollows between the mountains to the N. W. of Noah's Ark, as represented in the plan of False Bay, by Captain Joseph Huddart.

Noah's Ark is steep to, having 9 fathoms close to it; the soundings in the channel, between it and Roman Rocks, are from 10 to 15 fathoms: from hence, a ship should steer direct for the white sand downs, till she reach the anchorage in Simon's Bay. If working with a N. W. wind, she may proceed by the channel outside of Roman Rocks, which is clear and much wider than the common channel between them and Noah's Ark, taking care not to borrow very close to the N. W. side of Roman Rocks, as a rock, with 3 or 4 fathoms water on it, is said to lie at a small distance from them in this direction.

Eastern channel.

To work into False Bay, and to the eastward of the Whittle Rocks, toward Simon's Bay, a ship should not bring Cape Point to the southward of S. W. by W. by compass, till Noah's Ark bears N. W. by W.; and when on the starboard tack, bring Noah's Ark nothing to the northward of this bearing, by which the Whittle Rocks will be avoided; but she must not stand far to the north, towards the sunken rocks extending southward from Seal Island, on *one of which* the Warren Hastings touched, as mentioned above.

Anchorage.

The latitude of Simon's Bay is 34° 15′ S., the depths of water, 8, 9, and 10 fathoms; a good birth for a large ship, is Noah's Ark on with Cape Hanglip S. 33° E., and the north battery N. 13° W. by compass, off shore about 1 mile; or a ship making a long stay, may moor farther in, with Cape Hanglip shut in by the south point of Simon's Bay, but it is best to moor at a convenient distance from the shore, to have room in case of driving. Although the bottom is sand, the anchors hold well when seated in it. Ships moor in this road N. W.

and S. E., from May to September, with the stoutest *ground-tackle* to N. W., for this being the winter season, the winds prevail from that quarter, and often blow in strong gusts over the hills; from September to May, the S. E. and southerly winds may be expected to predominate, then the best bower should lie to the S. E., but in this season, ships generally prefer Table Bay.

Periodical winds.

In Simon's Bay, it is high-water at ½ past 3 o'clock, on full and change of moon; the rise and fall of tide is seldom more than 3 feet, and there is little current perceptible here at any time.

To sail from Simon's Bay.

From October to April, the south-easterly winds generally prevail, but do not continue longer than 5 or 6 days at a time, and are constantly succeeded by variable winds. In Simon's Bay, as in Table Bay, it frequently happens, that these winds after blowing very strong for a day, and part of the night, abate towards morning, and are succeeded by a land-breeze from W. N. W. By taking the advantage to weigh with the first of this breeze, a ship may sometimes get to sea before the return of the S. Easterly wind; if she cannot get clear out before the strong S. E. wind set in, the most prudent plan will be to return to the anchorage in Simon's Bay.

Ships bound to the eastward, should leave the bay when N. W. winds begin to blow; if bound westward, in the winter season, they ought to remain till these winds are on the decline, and get under sail when they shift to westward, as it is probable they will veer from W. to S. W. South and S. E. which will be favourable for doubling the Cape.

A caution for ships bound into the Cape in the summer season.

Ships from the eastward, bound into False Bay, or even into Table Bay, should be particular, when the south-east winds prevail in the summer months, not to fall to leeward of the Cape; for it will often be found very difficult to gain the former of these bays, if a ship make the land about the Cape bearing to the eastward, during strong south-east winds. Ships from India, at different times, bound into Table Bay with stores, have been obliged to bear away for St. Helena, on account of passing the Cape in the night, and were unable to beat up against the strong easterly winds and leeward current.

The Cape of Good Hope, is frequently the boundary of very different kinds of weather, for ships homeward-bound, have in general unsettled cloudy weather, and the winds variable to the eastward of it; but so soon as they get round to the westward of this promontory, the weather generally becomes favourable, with a steady S. Easterly wind; this may be expected in the summer season, more particularly.

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# *CAPE and BANK of AGUILHAS*.*

## DESCRIPTION OF THE LAND, THE BANK, AND CURRENTS.

Cape Aguilhas. Geo. site.

CAPE AGUILHAS, or LAGULLAS, bears from the extreme point of Cape Good Hope E. 20° S. (true bearing) distant 30 leagues, and it is the southernmost land of Africa, situated in lat. 34° 55′ S. lon. 20° 18′ E.

The bay near it, ought to be avoided in the night.

This Cape being more to the southward than stated in some nautical works, has been the cause of dangerous mistakes to several navigators bound to the westward. In December, 1795, the Milford got into the bay to the eastward of Cape Aguilhas in the night; they were

* Called by its discoverers, the Portuguese, Aguilhas, or Needle's Cape, because it is said the magnetic needle had no variation there at that time. The Portuguese name has been corrupted by the English sailors into Lagullas, or Lagullus. In 1598, the variation at this Cape was 06° 30′ W., at Cape Good Hope 25′ E., and at Cape False no variation.

first alarmed by the noise of breakers on the shore, when they thought themselves clear of all the land to the southward; at this time the wind was light, and the swell setting on the shore, obliged them to anchor; when day-light appeared, the breakers on the beach were not above 2 miles distant. With a fresh wind, which set in from S. E. this ship had some difficulty in working out of this deep bay, generally called Struys Bay.

The ship Star, from Amboina, bound to London, got into this bay in the night of October 2d, 1801. The journal says, "Got into the bay eastward of Cape Aguilhas, heard the noise "of breakers, had 6 fathoms, and tacked to the eastward; after tacking, had 7, 7, 7½, 8, "7½, and 7 fathoms, then heard the noise of other breakers a-head; tacked, and lay up S. "by W. with a light S. Easterly air, and deepened to 8½ fathoms; being then 3 A. M. a "breeze at N. N. W. came from the land, steered out S. by E. till day-light; hazy, no land "seen in the morning. Cape Aguilhas must be considerably more to the southward than "the position assigned it by Hamilton Moore, which has been the cause of our mistake."

Description of this Cape, and the land near it.

Cape Aguilhas is low even land, about the height of the North Foreland, and may be seen at 5½ or 6 leagues distance from the deck of a large ship. There is no high land within several miles of it in any direction; but to the W. N. Westward, at the distance of about 3 or 4 leagues from the Cape, an isolated hill is situated near the sea, called the Gunner's Quoin, which it resembles when seen from the eastward. This hill may be seen 9 or 10 leagues off, and is generally set by ships passing at too great a distance to see the low land near the Cape, as most vessels do. Ships coming either from the eastward or westward, and only arriving in sight of the Quoin, or other high land in the vicinity of Cape Aguilhas in the evening, should, if the wind is scant from southward, be aware that the low land of the Cape projects much farther to the south than any of the high land adjacent. By attending to this, they will avoid getting into the bays on either side of this Cape.

Aguilhas Bank.

From the Cape of Good Hope, along the south coast of Africa to Algoa Bay, a Bank of soundings projects out a considerable distance from the land; from Cape Aguilhas this Bank extends a great way to S. S. Eastward, and is generally called the CAPE BANK, or Bank of Aguilhas. The southern extremity of the Bank is nearly on the meridian of Cape Vaches, or in lon. 22° E. and is said to extend nearly to lat. 37° S. in this part*; but a little to the southward of 36° S. latitude, it converges quickly, and becomes of a narrow conical form, having very deep water on its southern end. The soundings on the Bank westward of Cape Aguilhas, to the southward of lat. 35° 15′, are generally found to be mud; to the southward of the Cape, frequently green sand, or sand of various kinds; and on the south-east and eastern parts of the Bank, to the eastward of Cape Aguilhas, the quality of the ground is mostly coral, or coarse sand, shells, and small stones.

Quality of ground.

To sound on it of little advantage.

Before lunar observations were practised at sea, it was customary for ships to get soundings on the Bank of Aguilhas, to correct their reckoning; which is no longer requisite, for the longitude obtained by observation must be more exact than can be ascertained by sounding on the Bank.

Farther description.

Grampusses, or whales, are frequently seen floating with their backs a little above water, more particularly in moderate weather with easterly winds, when the water is smooth on the Bank; at such times, a ship may be liable to run against one of them before it is awake, which has actually happened to some ships, and greatly alarmed all on board.

Gannets (or Soland Geese) are generally seen on the Bank in moderate weather; they are about the size of the domestic goose, entirely white, except that the extremities of the wings are tipped with black. They beat their wings quick in flight, like a duck or pidgeon, and are easily known from other large aquatic birds, whose wings are much longer.

Large seals, are also inhabitants of the Cape Bank and its vicinity.

* It has been said, that soundings of 91 fathoms were got on the tail of the bank in lat. 38° 15′ S. lon. 20° 40′ E.; but it remains uncertain, if the bank really extends thus far south. The Warren, however, had ground 125 fathoms in lat. 36° 46′ S.

Abreast of Cape Aguilhas, the Gunner's Quoin, and the land to the eastward of this Cape, the depths of water are from 40 to 50 fathoms, at 3 and 4 leagues distance from the shore.

THE SET OF THE CURRENT, round the Cape Bank was first explained by Major Rennell, in 1777, who published a chart of the Bank, exhibiting the direction of the current, and its velocity in the winter months.

The current contiguous to this bank.

As he has observed, the current in general, is strongest during the winter months, but it is sometimes found in other months to run equally strong. It runs with the greatest velocity along the verge of soundings, and a little outside of them, the direction of the stream nearly all round, conforming to the outline of the Bank. Far in upon it, near the land, the current is very weak, it is therefore advisable for all ships bound to the westward, to keep near the edge of the Bank when they have contrary winds, that they may benefit by the current.*

Runs generally westward, following the outline, or exterior limit.

Although a strong current sets round the Cape Bank to the westward, during both the winter and summer seasons, it is frequently obstructed by various causes, particularly with strong gales from the W. and S. Westward. When these blow, the current is sometimes completely repressed for a short time, but runs with redoubled strength immediately after, when these gales abate; at other times, it continues to run with considerable velocity against the strongest gales, producing a very high sea; but far in upon the Bank, towards the land, where the current is generally weak, the sea is always more smooth, and the winds more moderate.

But obstructed at times by various causes.

It produces a high sea.

Ships coming from the eastward, begin to experience the Cape Current when they approach the eastern verge of the Bank in lon. 28° E. to the eastward of Algoa Bay; sometimes it prevails much farther to the eastward, and along the coast of Africa, a considerable way to the N. Eastward. Bound from Bombay to London, in the Anna, we began to experience the westerly current July 28th, 1801, in lat. 30½° S. lon. 37° E. On this day it set W. 38 miles by chronometers; on the subsequent day, W. 35 miles; July 30th, it set W. 16° S. 48 miles; on the 31st, it set W. 12° S. 77 miles; lat. at noon 32½° S. lon. 31° 40′ E.; during this time, the winds were light at S. E. and Eastward. August 1st, the current was checked by a strong gale, veering from N. E. to N. W. and W. S. W.; on the 2d and 3d, had a set of 30 miles to the westward each day, saw the land near Cape Recife on the 3d; from hence had the winds variable with 2 gales at westward, till we got round the Cape of Good Hope on the 13th, in which time the current set generally 15 or 20 miles to the westward daily, and on one day 45 miles in this direction. During the westerly gales, the current was completely checked, and by the force of these winds, it sometimes set eastward. From China, bound to London, in the same ship, we got into the stream of the Cape current April 21st, 1799; on the preceding day, the noon lat. was 35° 11′ S. lon. 27° 59′ E. had no current; on the 21st, lat. 35° 03′ S. lon. by observation 26° 52′ E. the current had set W. 32° S. 27 miles by chronometers; from noon 21st to noon 22d it set W. 19° S. 52 miles, lat. 35° 13′ S. lon. by observation 25° 05′ E. at noon 22d, light winds from westward; from the 22d to 23d, the current set W. 36° S. 87 miles, being above 3½ miles an hour, lat observed 35° 56′ S. lon. observed 22° 51′ E. on the 23d at noon. By the strength of the current this day, the ship was greatly agitated, the sea it produced rising in confused heaps, although the breeze was moderate at W. N. Westward. Noon the 24th, lat. 35° 30′

Eastern limit of the current.

Examples of its direction and velocity along the verge of the bank and east of it.

* But they ought not to stand too far to the southward beyond the verge of soundings, where they will be subject to violent gales from the westward in the winter months, outside the stream of the current; and may perhaps get disabled, and be obliged to bear away for St. Augustine's Bay, or Port Louis to refit, which has happened to many ships.

S. lon. 18° 58′ E. the current having set W. 19° S. 32 miles; at noon 25th, abreast of Cape False, this day no westerly current, but a set of 9 miles northward.

The Arniston and fleet saw the land, May 28th at noon 1805, in lat. 30° 57′ S. lon. 31° 0′ E., and until the 29th, at 5 P. M. At noon, 29th, lat. observed, 32° 25′ S. lon. 30° 0′ E., the current set S. 38° W., 88 miles from noon 28th. At noon 30th, lat. observed 34° 14′ S. lon. 27° 46′ E., current set W. 14° S. 44 miles from 29th. Noon 31st, lat. observed 34° 21′ S. lon. 26° 36′ E., current W. 22° S. 65 miles from preceding noon. Noon 1st June, lat. observed 34° 53′ S. lon. 25° 15′ E., current set W. 16° S., 66 miles from the preceding noon. Noon 2d, lat. observed 36° 12′ S. lon. 22° 36′ E., current set S. 40° W. 74 miles from noon preceding. Noon 3d June, lat. observed 36° 23′ S. lon. 21° 42′ E., by chronometers, current set S. 35° W. 27 miles from noon 2d. When more to the westward, lost the current.

The abstracts here adduced, are to shew the general direction and velocity of the current, in its course round the edge of the Bank. Although it may at a medium rate, be taken at less than mentioned above, yet at some particular times, the velocity of this stream seems to be greater than exhibited in these abstracts, as appears by the Northampton's journal, and those of some other ships.

Singular instance of its strength.

Northampton, Dec. 23d, 1802, at 9 A. M., saw the Coast of Africa bearing N., about 25 leagues. At noon, lat. observed 35° 00′ S. lon. by chronometers 24° 54′ E. Dec. 24th, variable light airs, and a very confused swell, which makes the ship very uneasy. Find we have had a current of 47 miles to the southward, and 160 miles to the westward by chronometers, these 24 hours. Lat. observed at noon 36° 33′ S. lon. by chronometers 21° 53′ E. Which gives the direction of the current W. 20° S. velocity 139 miles, or 5½ miles per hour.

It is not easy to give our assent to a current of such velocity as this just mentioned, although it is attended with some probability; for constant gales from westward prevailed along the Bank during the first and middle parts of the month, which prevented the ships bound round the Cape from making any progress, until these winds abated about the 20th December. It is therefore probable, that the current at this time, began to set very strong to the westward along the Bank, as it had been kept back a considerable time by the strong westerly gales.

Direction of the current round the bank by the charts.

In most charts of the Cape Bank, the direction of the current is marked about S. S. W. from Infanta River to the meridian of Algoa Bay, diverging from the Bank, and from hence turns suddenly, and runs about W. N. W. to lon. 25° E., where it takes the direction of the edge of the Bank, setting nearly W. to lon. 23½° E. In 23° E. it continues to set along the verge of soundings about S. S. W. till it reaches the extremity of the Bank to the southward; here, it alters quickly in conformity to the outline of the Bank, and sets about N. W. in a direct line along the edge of it to the Cape Good Hope.

Different from real experience.

By combining my own experience, with information collected from many journals, the general course of the current round the Cape Bank, appears not to be exactly the same as just mentioned; but it conforms to the following description.

In June, July, and August, from about lon. 37° or 40° E. the current generally sets westward, between lat. 30° and 35° S., till it reaches the eastern part of the Cape Bank, off Algoa Bay.

On the coast of Natal, it sets along shore to S. Westward, till joined by the oceanic stream, on the edge of the Bank, in 27½° or 28° E. lon. between Algoa Bay and Infanta River. After the junction, it increases in strength abreast of Cape Recife, the south extreme of Algoa Bay, and takes the direction of the outline of the Bank, which is about W. by S. nearly, to lon. about 23½° W. In this space, it often diverges a little from the outline of the Bank, setting W. by S. ½ S. or W. S. W.; but seldom or ever W. N. W. and W. by N. as represented by the charts. In lon. 23½° E. the edge of the Bank begins to take a S. Westerly direction, soon after about S. S. W. ½ W., nearly to its southern extremity.

Its true direction described.

Here also the current follows its concave outline, taking a S. Westerly course in lon. 24° E., and from 23° E. it generally sets about S. W. by S. to the southern extremity of the Bank, in lon. 21¾° or 22° E. The velocity of the current is greatest from lon. 25° to 22° E., along that part of the Bank which takes the most southerly direction. At the southern extremity of the Bank, it seldom runs strong* beyond 36½° S. lat. or to the westward of lon. 21° E. From hence, a part of it seems to set weakly to the westward, and is lost in the ocean; but the strongest part follows the convex extremity of the Bank, and continues to set along the western edge of it to the N. Westward, directly towards Cape Good Hope. This N. Westerly current, seldom exceeds half the velocity of that setting to the S. Westward, on the other side of the Bank. The eddy current marked from Cape Aguilhas to the southward, in the charts, I have never experienced in passing near that Cape, but some navigators say they have felt its influence.

Contra, or easterly current.

AN EASTERLY, OR CONTRA CURRENT, often prevails outside of the regular stream that sets along the edge of the Bank to the westward. This easterly current is frequently experienced in lat. 36½° to 40° S., about 2 degrees from the eastern part of the Bank contiguous to Algoa Bay, between lon. 26° and 30° E.; and it sometimes extends to 36° or 35° ½ S. lat. within about 20 leagues of the Bank.

Instances of it.

From the 17th to the 20th April, 1799, we had in the Anna, a strong current to the S. E. in lat. 36° S. lon. 27° and 28° E.; and did not perceive any set to the westward, until in lat. 35° S., then near the verge of soundings.

In July, 1792, the Thetis was in 24 hours set 38 miles to the eastward by a current, in lat. 36½° S. lon. 28½° E. This ship had, in the same latitude and longitude, a stronger current to the eastward, in the voyage preceding; and also on her first voyage, a little farther southward, in the same longitude. The sea was much agitated at these times.

Nov. 28th, 1800, at noon, the Sir Edward Hughes was in lat. 39½° S.; on the subsequent noon in lat. 38¾° S. lon. 26° E.; the current having set N. N. E. ¼ E. 54 miles during the 24 hours.

In Feb. 1798, we kept mostly in 40° and 41° S., from the meridian of Cape Aguilhas to the meridian of the S. W. part of Madagascar; and had in general a daily set of from 20 to 30 miles eastward; and at two different times, 60 miles in 24 hours. From the meridian of Cape Aguilhas, to the meridian of Cape St. Mary, we had 4° of easterly current in 10 days, with variable winds from every quarter, but strongest from westward.

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# *WINDS and WEATHER near the BANK of AGUILHAS.*

## DOUBTFUL DANGERS, TO THE SOUTH, AND EASTWARD.

Periodical winds.

FROM September to April, which is the summer season, the S. E. winds are said to predominate in the vicinity of the Cape of Good Hope, and N. W. and Westerly winds from April to October, which is the winter or stormy season. But it must be observed, that the S. E. winds are more constant on, and near the Bank of Aguilhas, during part of January, the whole of February and March, than at any other time of the year. In April, also, they are expected, though in this month, short gales from the westward frequently happen. In May, the winds between N. W. and S. W. prevail more than the S. E. and Easterly winds,

* Keeping nearly in lat. 36° S. outward-bound in June, 1802, the wind strong at westward, we had a very weak current against us in passing the Bank of Aguilhas, only from 10 to 20 miles per day.

sometimes blowing in hard gales along the edge of the Bank. In June, these westerly and N. W. winds set in strong: during this month, July, and August, they blow with greatest force, producing very high seas, and were it not for the help of the westerly current setting along the edge of the Bank, ships would find it very difficult to get round the Cape in these months. All ships from India, which on their passage to Europe, reach the eastern part of the Cape Bank from April to September, should be in good condition if possible, and well prepared to resist bad weather; for they will be liable to encounter storms from W. N. W. to W. S. W., which may continue two or three days at a time, with short intervals of easterly and variable winds. Many ships by not being in condition to resist these gales, have sprung leaks, and were obliged to bear away for St. Augustine's Bay, in Madagascar, to repair their damages;* some have anchored in the Bays to the eastward of the Cape in in great distress; and others reached Simon's Bay with much difficulty, where they repaired their damages, and refreshed their crews, worn-out with fatigue.

From May to Sept. the westerly winds blow strong.

Ships bound to the westward in this season should be in good condition.

In August, the westerly winds blow not so constant as in June and July, although very hard gales of short duration may be expected. On the 4th of August, 1801, we were in the Anna, near the eastern part of the Bank abreast of Algoa Bay, and got round the Cape of Good Hope on the 14th, having encountered a very severe storm of two days continuance, from W. N. W. and W., in lon. 24° E. Westerly winds are also frequent in September, October, and November; and even in December, ships have been beating round the Bank against westerly winds during the whole month, before doubling the Cape. They had sometimes very severe sudden squalls; but in general, westerly gales are of short duration in this season, although they may blow very strong.

The westerly gales in August are not so constant as in the preceding months.

But happen also in the subsequent months.

Notwithstanding what has been mentioned above relative to winds, it sometimes happens, that ships get easily round the Cape Bank to the westward in every month of the year: many have been known to get round in May, June, July, and August, more speedily than others in November and December; for the winds are often different in one season, from what they are in another, even in the same month.

Ships sometimes get speedily round the Cape in the winter months.

Around the Cape Bank, as in the open sea far to the S. W., S. E. and southward of the Cape, the winds in changing, follow the course of the sun, seldom veering from N. to Eastward, &c.; but mostly from N. W. to W., S. W. and Southward. After blowing strong from N. W. or W. if the wind should veer to S. W. and Southward, it becomes light, or is succeeded by a calm. If a light breeze continues, it veers to S. Eastward, where it may keep fixed for a considerable time, but not above a day most probably, if it is the winter season. From S. E. it veers to E. and N. E. then to N. E. and N. In the vicinity of the Bank, the N. E. and Northerly winds are very transitory, but in lat. 39° and 41° S. from the meridian of Cape Aguilhas to 45° or 50° E. lon. the N. N. Easterly winds frequently are experienced in both seasons, and sometimes blow steady for a day or two at a time.

The winds revolve with the course of the sun;

But are very mutable.

There are sometimes N. W. or Westerly gales, near, and upon the Cape Bank, which blow very hard with a clear sky, but those most to be dreaded are generally preceded by heavy black clouds rising from the N. W. and Westward, with sometimes lightning issuing from them, or a noise of distant thunder; shortly after, the gale may be expected to commence by sudden gusts†, or whirlwinds from the heavy dense clouds.

Indications of westerly gales.

When the wind at S. E. or E. S. E. shifted to N. Eastward, the Dutch commanders were directed by the company to take in the mainsail. If lightning appeared in the N. W. quarter, they were to wear and shorten sail; for in the first case, they expected a hard gale at N. W.; and if lightning was seen in that direction, they thought the gale would commence in a sudden shift, or whirlwind, which might be fatal if they were taken aback.

Cautions of the Dutch.

* Some ships have perished in these gales. The Princess of Wales, with her crew and passengers, in a fleet homeward-bound from India. Also the Ganges, and probably the Skelton Castle, the William Pitt, and the United Kingdom.

† And sometimes heavy showers of hail.

The marine barometer combined with other knowledge, essential for anticipating storms.

I have found the Marine Barometer of great utility, in anticipating the storms near the Cape Bank, by a considerable fall of the mercury. A careful attention to this instrument, combined with the knowledge, every navigator ought to obtain by observing the appearance of the atmosphere, and surface of the sea, or celestial orbs, will be sufficient to warn him of the approach of the storms. Although a fall of the mercury, generally precedes a *gale* of *wind* in these latitudes, it is seldom disturbed by hard squalls of *short duration.*

Mercury in Barometers rises with southerly, and falls with northerly winds, in the southern hemisphere.

In the vicinity of the Cape Bank, and in most parts of the southern hemisphere, the mercury *rises* with *southerly*, and *falls* with *northerly* winds; these proceeding from a warmer atmosphere are more rarified, consequently the mercury falls in the barometer, whereas southerly winds coming from the frozen regions near the pole, are more dense, and cause the mercury to rise. This ought to be kept in remembrance; for I have several times when the wind was from south-east, observed the mercury to fall considerably. before it changed to the northward, and expected a gale, but the fall resulted only from the warmer air coming in contact with, and repelling the former.

Hard gales happen to the eastward of the Cape Bank, with dangerous lightning and thunder.

From the Cape Bank to the meridian of the south-end of Madagascar, hard gales of wind happen in the winter season, accompanied with lightning, thunder and much rain; which sometimes prove very dangerous to ships, particularly near the land.

Dangerous consequences of ships being struck by lightning near the Bank.

The Britannia, and Bombay Castle, homeward-bound at different seasons, were struck by lightning off the Cape; the latter ship was near the land at Algoa Bay, in company with a fleet. These ships had each her foremast set on fire by the lightning, which penetrated from the head to the centre, bursting out in that part, and could not be got under: the Britannia was laying to, at the time, in a storm. Both ships were fortunately saved by cutting away their foremasts, which fell clear of them in a body of fire.*

Many oceanic birds are seen before, and during the storms.

In the storms off the Cape Bank, and to the eastward, the sea is turbulent, and they are generally accompanied with a black overcast sky. When they are about to commence, and during their continuance, numbers of albatros, peterels, and other oceanic birds, are seen flying about; although in moderate weather, few are perceived, for at this time they rest on the surface of the sea to fish, which they cannot do in a storm.

Telemaque Shoal.

TELEMAQUE SHOAL, said to have been discovered by Capt. Geraud, on the 22d January 1786, in the French brigantine Telemaque, bound to Madras, who, with his passengers, were firmly of opinion, that they had passed over a dangerous coral shoal of great extent, having apparently not more than 2 fathoms on some parts of the rocks; but they did not sound, owing to the anxiety of considering themselves in imminent danger at the time.

This supposed danger, the Telemaque made in lat. 38° 11′ S. and lon. 21° 57′ E. by account, as they had no observation on that day, or on the day preceding. Mr. Petrie, by an examination of the log of the Telemaque on her arrival at Madras,† found that the corrected situation of the shoal should be lat. 38° 50′ S. lon. 22° 2′ East of London. Another account places it in lat. 40° 47′ S.; it is therefore difficult to assign to this danger its true place, if it has any existence, which there is great reason to doubt, as many ships have passed over the situations assigned to it, without discerning any appearance of danger, and some of

* The Thames, a small ship from Bengal, was near the edge of the bank, in lat. 35° 15′ S. lon. 25° E., Nov. 30th, 1801. She had then strong gales at westward, hard squalls, hail showers, a high sea, and much lightning all round. At 7 A.M. with a sudden explosion, several fire-balls were seen to strike the ship, when sending down top-gallant yards. Two men were thrown from the main-top-mast-head into the sea, and perished: one thrown from the main-top on deck, and two much scorched in the top. One was killed in the fore top by the lightning, and one man much scorched on deck; the fore-topsail yard, it also set on fire. Hail showers, and hard squalls at the time.

† After escaping this supposed danger, they went no farther south than lat. 35° S., where they had east and S. E. gales, with high seas, and much bad weather. They were 50 days in running down their easting, and from the 22d January to the 17th of May from the Cape of Aguilhas to Madras.

H. M. ships on the Cape station, have searched for it in vain. It seems therefore, probable, that the Telemaque Shoal has no existence.

The Crown Prince Frederick, in 1796, when in lat. 39° 9′ S. and in lon. 23° 24′ E. by good observations, perceived discoloured water to the northward, eastward, and westward, which Capt. Richardson of that ship, thought might be on the southern verge of the Telemaque Shoal. Thought to have been seen by other ships.

The American ship Pallas, on the 11th January 1807, at 1 P. M. passed over the north-east point of an *apparent* shoal, on which the water was very white and spotted, and on two places the sea appeared to break very high. The discoloured water extended as far as the eye could reach, but being directly to leeward, and the wind blowing strong at the time, they did not try for soundings. The situation of this *apparent* shoal by noon observation, was found to be lat. 38° 5′ S. lon. 22° 58½′ E. by observations of ☉ ☽ taken 6 days previously, and 23° 6¾ E. by account. The Pallas fell in with H. M. S. Lord Duncan 5 days afterward, and the chronometer of the latter ship, would place the supposed shoal about 40 miles farther west, but the lon. of both ships by lunar observations nearly corresponded.

His Majesty's Sloop Otter in Nov. 1810, saw the appearance of an extensive shoal in lat. 33° 56′ S. lon. 36° E., no part of it above water. Otter's doubtful shoal.

The Glatton, Brunswick, and Royal Charlotte in company, in the night of the 5th July 1802, hove to, by signal, the Glatton having carried away her fore-top-mast. From 1 to 3 A. M. they sounded several times in the Brunswick, and *apparently* had ground from 82 to 95 fathoms, seven different casts of the lead, for rock-weed came up with it; but as no soil stuck to the arming, it is possible they may have been deceived by the lead bringing up rock-weed, which might have been floating on, or near the surface of the sea, and consequently not brought up from the bottom as they supposed. They were in lat. 37° 20′ to 37° 30′ S. at the time, lon. 36° 19′ E. by mean of lunar observations and chronometers. Brunswick's doubtful bank.

The Osterly, on the 27th August 1798, at 1 P. M. saw from the mizen top-mast head, the appearance of a sand-bank even with the water's edge, which seemed about 2 miles in extent, and is situated in lat. 39° 9′ S. lon. 40° 19′ E. by chronometers.

The American ship Union, at 4 P. M. 22d July 1812, saw a rock 20 yards in length, and 6 feet above water, surrounded by a sand-bank, with breakers, as far as the eye could discern from the top-mast-head; and at sun set the shoal bore from N. E. ½ E. to E. by S. distant 3 miles, no ground with 120 fathoms line. The lat. at noon was 35° 23′ S. lon. 41° 29′ E. by chronometer, and 41° 12′ E. by lunar observations; the run from noon to 4 P. M. when the shoal was first seen, was very little, having just wind sufficient to steer the ship. Union's doubtful shoal.

A Dutch officer, proceeding to the island Mauritius, was captured by the Royal Admiral in October 1795, and stated that he had discovered a shoal in lat. 31° 44′ S. by observation, and in lon. 44° E. by estimation, upon which he had several good casts of soundings, the sea running very high and confused; and the water appeared shoal, with breakers to the northward, when viewed from the mast head. Dutch shoal doubtful.

His Majesty's ship Belliqueux, convoying the fleet from China, at 5 P. M. August 23d 1801, hove to, and had ground 80 fathoms, then 132 fathoms; the lat. was at the time 28° 43′ S. lon. 42° 50′ E. by ☉ ☽, and 42° 26′ E. by mean of 7 ships chronometers. Three ships of the fleet sounded at the same time, but got no ground at 110, 150, and 170 fathoms. Belliqueux's Bank doubtful.

The Swallow, Capt. Wilson, from Bengal bound to England in 1815, saw a high rock 26 feet above water, with another rock just above the surface of the sea, about ½ a mile to the westward of it, and the appearance of shoal water extending to the E. S. E., as far as the eye could reach from the mast-head; passed to the northward of the rocks at 3 miles distance, no ground 120 fathoms. By mean of 2 chronometers and 7 sets of lunar observations nearly corresponding, these rocks were found to lie in lat. 28° 20′ S. lon. 42° 13′ E. Swallow's doubtful shoal.

The American brig Atalanta, is said to have seen a shoal in lat. 37° S. lon. about 52° E. Atalanta shoal, doubtful.

Slot Van Capelle shoal,

The Slot Van Capelle Shoal, or Dutch Shoal, said to have been seen by Capt. Jacob Bows in the ship of this name in 1746, with *breakers on it*, and soundings of 62 fathoms grey sand to the S. W. about 4 or 5 leagues, has had various situations assigned to it, viz. lat. 38° 24′ S. lon. 38° 50′ E., lat. 37° 24′ S. lon. 38° 50′ E. lat. 38° 20′ S. lon. 43° 30′ E. lat. 36° or 36½° S. lon. 41° E. and lat. 40° S. lon. 43° 30′ E.

The last situation but one, viz. lat. 36½° S. lon. 41° E. assigned to the Slot Von Capelle Shoal, nearly corresponds with the following account transcribed by me from the journal of Capt. William Bennett, who was an officer in the ship Atomatia, when she got soundings, *apparently*, on that shoal, and to him I am indebted for this interesting communication. She had formerly been a Spanish frigate, sailed remarkably fast, and left Plymouth in 1801, to bring home a cargo of rice from Bengal.

"May 16th 1801, strong W. N. W. winds, steering east at the rate of 10 and 11 knots, "came suddenly into a smooth sea at 10 P. M., and supposing we were in soundings, hove "to, got ground 82 fathoms, small glittering shells and grey sand. Steered east by com- "pass 4½ miles, and at ½ past 10 sounded again in 62 fathoms, small white shells and sand, "with black specks. Steered 5 miles N. E. by compass, and at ½ past 11 P. M. again "sounded with 120 fathoms line, but got no bottom. We supposed ourselves to be on the "Dutch bank."

At noon the observed lat. was 36° 11′ S., from which time, computing the run back to ½ past 10 P. M. when they sounded in 62 fathoms, would place that part of the bank in lat. 36° 30′ S. or 36° 35′ S. and in lon. 43° 43′ E. by dead reckoning, carried on from the Island Trinidad, seen on the 21st of April. But they had an observation of the sun and moon for the longitude on the 6th of May, from which, computing the run to the 16th at ½ past 10 P. M. will place that part of the bank with 62 fathoms on it, in lon.* 41° 8′ E. or 2° 35′ west of its situation by account from Trinidad; and in the lat. mentioned above.

seems to exist.

The existence of the Slot Van Capelle Shoal, has long been doubted by many navigators, but from what has been now stated, it certainly does exist, although its situation is not yet correctly ascertained. It remains still doubtful, whether or not any part of this shoal be dangerous, as a Dutch ship (it has been said) formerly struck on it, and lost her rudder. Navigators, ought therefore, to be careful, if they should happen to be running near the parallel of 36½ S. lat. between 41° and 44° of east longitude.

French shoal doubtful.

A French ship is said to have passed close to breakers in lat. 38° 8′ S. lon. 43° 6′ E. of London by account, on her passage from Marseilles to the Island Mauritius in 1788.

The existence of these dangers doubtful,

There is great probability, that the exuviæ of fish, patches and beds of spawn, dead whales, or part of the wrecks of ships, which are not unfrequently seen floating on the sea in these latitudes, during the summer months, have been mistaken at times for banks, shoals, or rocks near the waters edge; for some of these patches are of a reddish† or brown colour, others resemble saw-dust, and might easily be mistaken for sand-banks. The supposed rock seen by the American ship Union, also those seen by the Swallow, might probably have been a dead whale, surrounded by a bed of fish-spawn resembling a sand-bank, with ripplings like breakers extending from it, occasioned by a collision of currents, which phenomenon has deceived many navigators. It may, however, be prudent to keep a good look out, when near any of the situations described above, although the existence of most, or all of these dangers, appears to be very doubtful, excepting the Slot Van Capelle or Dutch Shoal.

but a good look out is proper-

It is reprehensible, and much to be regretted, that *modern* navigators have made so many discoveries of dangers to the southward and eastward of Cape Aguilhas, without having examined any of them, so as to place their existence beyond the reach of doubt. Whereas, in

* This is nearly the longitude of the shoal said to have been seen by the Union as stated above, but upward of a degree farther to the south.

† When the water in some of these reddish patches is taken up and examined by the microscope, it is sometimes found to contain minute cray fish and other young fry.

none of the Journals of the Company's Ships, during the 17th and great part of the 18th century, is there any notice of dangers supposed to exist in those seas.

ICE ISLANDS, have sometimes been mistaken for land by ships which have proceeded far to the southward; such probably are Denia and Marseveen, 2 small islands placed near each other in some charts in lat. 41° S. lon. 21° 30′ E., but the Company's ships seldom steer so far south as to meet with Ice Islands. Ice Islands have been mistaken for land.

Proceeding toward India in the Carron, in Feb. 1798, we went into lat. 42½° S. in search of westerly winds, where the atmosphere became very cold, with almost constant fogs and sleet, the sea being covered with snow peterels, indicating that we were not far from ice; we were therefore glad to return into lat. 40° and 39½° S. where we got speedily to the eastward. Ships should not go too far south.

Ships bound to New South Wales, should be careful not to proceed too far south, in running down their easting, particularly at the beginning of summer, for H. M. ship Guardian bound outward with stores, struck against an ice island in a dark night in lat. 46° or 47° S. She soon after nearly filled with water, and the chief part of the crew left her in the boats; but Capt. Riou, and a few of the people, remained in the ship, and suffered great hardships, as she continued nearly full of water, and was tossed about a considerable time without a rudder, till at last a French frigate discovered them, and towed her into Table Bay at the Cape of Good Hope, where she was wrecked, by driving on the shore with several other ships in a storm. A dreadful accident occasioned by doing so.

## *ISLANDS in the SOUTHERN OCEAN.*

### DIRECTIONS TO SAIL FROM THE CAPE OF GOOD HOPE TOWARD BASS' STRAIT, AND CAPE VAN DIEMEN.—WINDS AND CURRENTS.

BOUVET'S ISLAND, OR CIRCUMCISION, was seen in 1808, by the Swan and Otter, at different times, both vessels belonging to Messrs. Enderby, employed in the Southern Fishery. Bouvet's Island.

The Swan, Capt. Lindsay, on the 6th of October 1808, discovered high land, and from this time till the 11th, they made every effort to get close to it, without being able to get nearer the land than 3 miles, on account of a mass of solid ice surrounding it, and the land itself was covered with snow.

Their situation was rendered very perilous at times, being beset with loose masses and islands of ice, in dark blowing weather, which forced them to depart from this inhospitable place on the 11th of October.

The observations taken in the Swan make this island in lat. 54° 16′ S. lon. 6° 14′ E.; it appeared about 5 miles in extent east and west, and the west end, which is very high land, Capt. Lindsay called DALRYMPLE'S HEAD. This must be the Cape Circumcision of Mons. Bouvet, discovered by him on the 1st January 1739, who placed it in lat. 54° 8′ S. lon. 11° 10′ E. Capt. James Cook, could not find this land, although he got into its parallel of latitude considerably to the westward of the meridian assigned to it by Bouvet, and he appears to have passed about 6 or 8 leagues to the southward of its situation as determined by Capt. Lindsay. Our celebrated circumnavigator, was therefore of opinion, that Mons. Bouvet had mistaken ice islands for land, but the existence of the Island of Circumcision, seems now proved beyond all doubt. Geo. site.

Although the Swan was prevented by the ice from approaching close to it in October, this might probably be effected in January or February.

Prince Edward's islands.

PRINCE EDWARD'S ISLANDS, two in number, were named by Capt. Cook, who passed through the channel between them in December 1776, and found it about 5 leagues broad, and very safe. These islands are high, and were then covered with snow, and the largest was thought to be about 15 leagues in circuit, the body of it being in lat. 46° 53′ S. lon. 37° 46′ E.; the other in lat. 46° 40′ S. lon. 38° 6′ E. and about 9 leagues in circuit.

Geo. site.

Crozet's Islands.

CROZET'S ISLANDS, four in number, were discovered by the French navigators Marion du Fresne, and Crozet in 1772, but their true geographical situations are not yet determined. They are said to lie from 9° to 12° to the east of Prince Edward's Islands, the N. Westernmost being nearly in the parallel of the southern Prince Edward's Island; and the two easternmost islands lie a little more to the south, and farther to the eastward. These, and Prince Edward's Islands, are sometimes visited by the southern fishers, in search of seals or sea elephants, but as they appear to be destitute of any harbour or places of shelter, the landing difficult, and the weather often tempestuous, they present an unfavourable aspect for commerce.

Kerguelen's Island.

KERGUELEN'S ISLAND, discovered by the French Navigator of this name, (called DESOLATION, by Captain Cook,) is the largest of those situated in this part of the southern ocean, and it is frequented by English and American fishers, several of whom, remain many months there, preparing seal-skins and oil, which they collect from the numerous herds of seals, and sea elephants, that bask on the shores of this island.

Geo. site.

Cape Louis, the western extremity, is in lat. 49° 3′ S. lon. 68° 20′ E.; Cape Digby, the east point, in lat. 49° 23′ S. lon. 70° 33′ E.; Cape George, the southern extremity, in lat. about 50° S. lon. 70° 10′ E.; and Cape Francois, the northern promontory of the island, is in lat. 48° 40′ S. lon. 69° 4′ E. This Cape forms the north side of Christmas Harbour, which has 45 fathoms water at the entrance, 16 fathoms farther in, and near the bottom of it, good anchorage in 8 fathoms black sand, where ships are sheltered from all winds, the harbour being only open to two points of the compass, and these covered by the islands in the offing. The south point terminates in a high rock, perforated like the arch of a bridge, which is a good mark for distinguishing this harbour, There are several bays on the coasts of Kerguelen's Island, with many rocky shoals and islets, which render the approach to the shore dangerous in some places. And at a small distance from the N. W. extremity, lies a group of small isles, the northernmost of which, called Bligh's Cap, is a high barren rock,

Bligh's Cap.

situated, in lat. 48° 29′ S. lon. 68° 40′ E. The tides are considerable here.

Island St. Paul.

ST. PAUL, is the southernmost of two islands, situated nearly on the same meridian, distant from each other about 17 leagues; the Dutch Navigator, Vlaming, who examined these islands in 1697, called the northernmost Amsterdam, and the other St. Paulo, which is better known, and more accessible than the former; and may be seen about 20 leagues distance in clear weather. It extends about 8 or 10 miles N. W. and S. E., and is about 5 miles in breadth, having a level aspect, and sloping down at each extremity when bearing to the N. E.

On the east side of the island, there is an inlet to a circular basin, through which the sea ebbs and flows over a causeway at its entrance. A head-land appears on each side the entrance, and a rock 80 or 90 feet high, resembling a nine-pin or sugar-loaf, stands at a small distance from the shore on the northern side. Abreast of the bason, there is good anchorage in 21 or 23 fathoms black sand, like wet gun-powder, about a mile from the shore,

where ships are sheltered from westerly winds. This is the only safe anchorage, in other parts, the bottom being rocky, with deep water near the shore; and from the western extremity of the island, a reef on which the sea breaks, projects out to a considerable distance. Anchorage.

One of the vessels that frequent this island for the seal fishery, was driven on shore from her anchors and wrecked, by a sudden shift of wind; ships, therefore, ought to avoid this anchorage, if there be the least indication of an easterly wind.

Mr. J. H. Cox, in the ship Gustavus, on the 30th of May 1789, anchored here in 20 fathoms black sand, with the S. E. point of the island S. W. by S. (compass bearing) distant 2 miles, the N. E. point N. ½ W. 2 miles, entrance into the bason W. by N. 1¼ mile, sugar-loaf W. N. W. 1 mile, which was nearly in the spot where Vlaming anchored in 1697.

With some difficulty the cutter got over the bar of the entrance into the lagoon, as the tide was running out of it about 2½ knots, being then ½ ebb. Long coarse grass obstructed their assent to the top of the hill, in order to look for fresh water, where it was thought Vlaming found it; but although fresh water had been discovered there, it would have been very difficult if not impracticable to have watered the ship; for present expenditure, it might however be valuable, to any vessel that intended to remain at the island for a considerable time.

In rowing round the bason, smoke was observed to issue from several places among the stones close to its verge, and a pocket thermometer which stood at 62° in the open air, rose to 190° when immersed in the water, and then in about a minute fell to 185°; and this was found to take place in several of the hot springs, at different parts of the bason. Sometimes in the same hole, the thermometer fell from 185° to 182°, and rose again to 187° or 188°. Our people who were on shore sealing, constantly boiled their dinner of fish in some of these springs, which are in all parts close to the bason, mixing with its waters in some places, and heating them to a considerable extent. And as the bason abounds with fish, and no art required to catch them, one of the boys in five minutes caught a sufficiency for our whole party to eat, so that, as Vlaming says, you may really throw the fish fastened on the hook, out of the cold into the hot water, and boil them. Bason. Hot Springs.

June 1st. The weather being clear at day break, saw from our anchorage the Island Amsterdam, bearing by compass from N. 10° E. to N. 22° E.

June 5th, P. M. blowing hard from N. E. with a great sea, we resolved to put to sea, and run under lee of the island; at 5, got a spring on our cable to cast, cut it close to the splice, and went to sea.

We lay in a good birth to clear the island on either side, but it would be safer for a large ship to lie about 2 cables lengths farther to the eastward, and at the appearance of blowing weather from this direction, to put to sea immediately, and run to leeward of the island, where smooth water will be found; and as the easterly wind is never of long continuance, she would soon regain the anchorage. The anchorage unsafe in blowing weather.

There is not a shrub on the island, coarse grass and reeds being the only verdure seen: a sort of turf composed of the decayed fibres of the grass and reeds, burnt very well.

During our short stay here, we killed 1200 seals: many whales were constantly playing about the ship, said to be of the spermaceti kind, by several of our people who had been in Greenland. No trees.

In the bason, we caught bream, some red perch, and a fish resembling a tench. Those caught on board were generally a sort of bream, striped like a mackarel; of these, so many were caught the first day, that besides salting and pickling several barrels, we threw some hundreds overboard. The instant fish are caught, they should be gutted and salted: if exposed to rain before they are salted and packed, they will perish, as we experienced to our cost. Abundance of fish.

Vlaming's description of the bason.

Vlaming says, " near the right road is a salt water pond, whereto the seals go over the " rock that separates it from the sea, about 20 paces. This pond is shaped like a half- " moon, and about pistol-shot long." But this pond is now a large bason, at least 2½ miles in circuit, forming almost a complete circle; it is therefore probable, that since his time, the sea has formed the present channel into it, and enlarged it to its present size.

Hindostan's description.

The Hindostan anchored here in 1793, about 1¼ mile east from the entrance of the bason, when bound out with the embassy to China. On examination, the bason was found to be the crater of a volcano, its circumference at the water's edge being 2980 yards, or nearly 1¾ mile. By taking the perpendicular height of the surrounding sides at 700 feet, and the angle of their inclination at 65°, the circumference of the crater will be 2 miles and 160 yards. The depth of water 29 fathoms, or 174 feet, added to the average height of 700 feet, will make the whole depth of the crater 874 feet, and it is a pretty regular ellipsis.

The entrance into the bason, is about 25 yards wide, formed by two narrow causeways, or ridges of rocks, that run out from two peaks, which terminate the sides of the crater, one on each side: that on the right is 743 feet high, and at its foot, on the causeway, there is a hot spring, where the thermometer stood at 212°, at which were boiled some fish; and this is the general standard of heat at all the springs round the water's edge. From the ship at anchor, fire was seen to issue from various crevices on the island during the night, it being fraught with subterraneous fire.

Tides, &c.

From the north and from the west points of the island, breakers project about ¼ of a mile into the sea. The tide rises about 3 feet, high water at full and change of the moon about 11 o'clock.

Sealers who have resided on this island, state the weather to be fine in summer, but stormy in winter, whirlwinds sometimes tearing the water from the surface of the crater. Torrents of rain which burst over the hills, pour down and form ravines in them. The

Variation.

variation here in 1747, was 17° 35′ W.; in 1764, it was 18° 45′ W.; in 1789, it was 19° 45′ W.; and it was 19° 50′ W. in the crater in 1793. By good observations, the lat.

Geo. situ.

of the anchorage off the bason is 38° 42′ S., and the south end of the island in 38° 47′ S. Capt. Bligh (now Admiral Bligh) by chronometer, made the lon. of St. Paul 77° 17′ E., and the Buccleugh made it in 77° 18′ E.; but it is certainly about 10 leagues more eastward, for the mean of 10 ships observations by moon and chronometers, placed it in lon. 77° 51′ E. The fleet bound to China in 1804, under convoy of H. M. Ship Atheniene, hove to under lee of it on the 11th of October, and by mean of 9 ships observations by moon and chronometers, placed the island in lon. 77° 53′ E., so that the true longitude of St. Paul, *appears* to be about 77° 52′ E.

Amsterdam.

AMSTERDAM ISLAND, situated on the same meridian as St. Paul, distant about 17

Geo. site.

leagues from it, lies in lat. about 37° 52′ S., and in lon. 77° 52′ E.; being about 12 miles in circuit, and high land, it may be discerned 18 or 20 leagues in clear weather.

Description.

In 1697, Vlaming, the Dutch Navigator, anchored in 16 fathoms black sand, on a spot about a cannon-shot from the shore, at the south part of the island: they landed, but found no water, and the bushes and rushes on this side, made it difficult to penetrate into the interior. In 1770, the Morse sent her boat on shore, part of the crew landed with difficulty, and found the island covered with high grass and shrubs, but very little water could be discovered.

Admiral D'Entrecasteaux, in passing this island 29th March, 1792, observed it to be all in a blaze, the smoke indicating vegetables on fire, which were probably set on fire by sealers, or by lightning; consequently, the vegetation on it may be now diminished. Some little rivulets were perceived on the S. E. side, and it was thought that the sloping of the mountains here, would afford an easy landing in favourable weather.

Strong westerly gales prevail near these islands in the winter months, with thick hazy weather, rendering caution necessary when they are approached. Although patches of sea-weed extend to a considerable distance from them, these are not always observed in coming from the westward, particularly when the winds blow from this direction.

Passage from St. Paul to Bass' Strait.

THE PASSAGE from ST. PAUL, through BASS STRAIT, and round CAPE VAN DIEMEN, has sometimes been followed by ships which departed too late from England to pursue the common route for China, and instead of passing through any of the straits east of Java, as usual, when late in the season, they proceeded round New Holland by the route of the Pacific Ocean; which although circuitous, and ought not to be adopted under usual circumstances, yet some ships have made tolerable passages to China by this route.

The Walpole left the Cape of Good Hope 21st Sept. 1794, with a fleet, parted company 7th Oct. in lat. 39° 5′ S. lon. 61° 42′ E., rounded the south Cape of Van Diemen's Land 31st, passed to the east of New Caledonia, and reached Canton River, 5th January, 1795.

H. M. Ship Atheniene, with a fleet for China, passed St. Paul 11th Oct. 1804, entered Bass' Strait 28th, passed to the east of New Caledonia, and reached Pedro Branco on the coast of China, on the 28th December. Since the discovery of Bass' Strait, the passage through it is generally preferred to that round Van Diemen's Land, as it is equally safe, and greatly shortens the distance.

A ship having passed the Island St. Paul, and intending to pass through Bass' Strait, may get into lat. 39° or 39½° S., then steer east on this parallel; as she advances, the variation will rapidly decrease; in lon. about 132° E. there will be none; and having advanced 1° or 2° more to the east, she will begin to have easterly variation; at King's Island, in the west entrance of Bass' Strait, it was 7° 38′ East, in 1807.

Cape Leeuwin, Geo. site.

CAPE LEEUWIN, (Lioness) the S. W. extremity of New Holland, or Terra Australis, is in lat. 34° 22′ S., and in lon. 115° 6′ E. by Captain Flinders, who says, it appeared to be formed by islands adjoining to the main land.

On the N. W. side of this Cape, there is *said* to be an inlet or river, fronted by an island at the entrance, which obscures it from the view of a ship passing outside, but there is said to be a navigable passage on each side of the island leading into the river.*

There is a bay on the east side of the Cape, destitute of shelter, and thought to be dangerous. Soundings of 80 or 85 fathoms, are found about 9 or 10 leagues to the S. S. W. of this promontory.

Places of shelter.

The chief places of shelter on the south coast of Terra Australis, between Cape Leeuwin and Bass' Strait, where a ship might procure fresh water in a case of necessity, are the following;—

King George's sound. Geo. site.

KING GEORGE'S SOUND, the entrance of which, is formed on the south side by Bald Head, situated in lat. 35° 6¼′ S. lon. 118° 1′ E., is well sheltered from all winds, but those from eastward. Fresh water is found near the anchorage on the south side of the sound; the approach to Bald Head may be known by the Eclipse Isles, which lie about 3 or 3½ leagues to the S. Westward. Oyster Harbour, and Princess Royal Harbour, at the bottom of the sound, are perfectly secure, but will admit only small vessels.

Port Lincoln. Geo. site.

PORT LINCOLN, in lat. 34° 48′ S. lon. 135° 45′ E. about 7 leagues north from Cape Catastrophe, the south-west extremity of Spencer's Gulf, is a very secure harbour, discovered by Captain Flinders, in February 1802, where fresh water is got by digging pits at the head of the port, or western extremity.

* This account I received from Captain Scott and Mr. Wright, both lately returned from Port Jackson.

Nepean Bay. Geo. site. NEPEAN BAY, in lat. 35°44′ S. lon. 37° 55′ E. at the N. E. part of Kanguroo Island, is sheltered from all winds but those from north; Captain Flinders seems not to have found any fresh water convenient for ships at this place, but plenty of Kanguroos were shot. The south and west coasts of Kanguroo Island were not explored, but the Investigator's Strait, formed between the north side of the island and Cape Spencer, is wide and safe; Back Stairs passage, is above 2 leagues wide, formed between the east end of the island and Cape Jervis, having some islets called the Pages at its entrance, but it affords a safe approach, and is the shortest route to Nepean Bay.

There appear to be no places of shelter between Kanguroo Island and Bass' Strait, and few parts of the coast afford any fresh water. Soundings extend a considerable way out, along the whole of the coast from Cape Leeuwin to Bass' Strait.

Geo. site of Cape Otway and King's Island. CAPE OTWAY, in lat. 38° 53′ S. lon. 143° 30′ E. is a high promontory, bounding the the west entrance of Bass' Strait on the north side, which is about 14 leagues wide between the Cape and the north end of KING'S ISLAND, the latter being in lat. 39° 36′ S. lon. 143° 55′ E.

Harbinger's Reefs. New Year's Isles, &c. About 5 or 6 miles to the west and N. W. of the north point of this island, lie the Harbinger's Reefs, consisting of high breakers in patches, with a passage through them, and another between them and the island. New Years' Isles are a little farther to the southward, fronting a bay on the N. W. side of King's Island, where ships can anchor well sheltered from easterly winds, and the brig Harington rode close under New Year's Isles, during a gale at S. W. But the best anchorage in westerly winds, is on the N. E. side of King's Island, in 10 or 12 fathoms sand, where there is a fresh water lake inland.

King's Island, is about 10 leagues in extent north and south, and 6 leagues from east to west, and may be seen 10 or 12 leagues. Sea-Elephant Bay on the middle of the east side, and the Bay of Seals at the S. E. side of the island, also afford *shelter* from West and N.W. winds. The tide rises here 12 feet, high water about 3½ hours on full and change of the moon.

The channel between the south end of King's Island, and Hunter's Isles, fronting the N. W. end of Van Diemen's Land, may be adopted if necessary, but as Reid's Rocks lie nearly in the middle of it, and it seems not yet sufficiently explored, the north channel is preferable.

Wilson's Promontory. Geo. site. WILSON'S PROMONTORY, in lat. 39° 11′ S. lon. 146° 24′ East, projects nearly due south, about 8 leagues from the low land of the main, forming the northern boundary of the east part of Bass' Strait, and may be seen 15 leagues. This is the southernmost land of Terra Australis, and it is easily known by its height, and several groups of islets around. RODONDO, a white pyramidal rock, distant about 3 leagues, nearly due south from the promontory, and bearing E. ¾ N. *true* from the north part of King's Island, distant 37 leagues, may be discerned 10 or 11 leagues. MONCUR'S ISLES, a small group, lie 2 leagues east of Rodondo, and HOGAN'S GROUP, lies east of Rodondo about 8 leagues, being in lon. 147° 2′ E., and are high islands.

Sir Roger Curtis' Isles. SIR ROGER CURTIS' ISLES, distant 39 or 40 leagues *true* east from the north end of King's Island, may be seen about 11 leagues off, the southernmost of them being 2 small and high peaked rocks, situated on the parallel of the north end of King's Island, but the northern island is much larger.

Devil's Tower. DEVIL'S TOWER, lies about 2 or 3 leagues to the N. E. of the north, or largest isles of Sir Roger Curtis' Group; it is called, also, Fortification Isle.

Crocodile Rock. CROCODILE ROCK, lies nearly in mid-channel, between Rodondo and Sir Roger Curtis' Isles, and is very dangerous. The Castle of Good Hope, Captain M'Askill, 7th

February 1803, running at the rate of 9 miles per hour, in order to get through Bass' Strait before night, saw when entering the channel between Sir Roger Curtis' Isles and Rodondo, breakers a-head very close; the helm was put down, sail instantly reduced, and the ship cleared the rock about ½ a cable's length, upon which the sea foamed with breakers. It appeared about 12 or 14 yards in extent where the sea broke, but has probably a greater base, and although a part of this rock is only 2 feet under water, the sea perhaps does not break on it at high tides when the weather is fine. From Rodondo, it bears about S. E. ½ E. by compass 7 miles, and from Sir Roger Curtis' Isles N. W. ¼ W. distant about 11 miles, and it is steep to. Captain Park, of the Cato, 3d April, 1803, saw also the Crocodile Rock, and passed within a mile of it, in 45 fathoms water, the sea then breaking high upon it: he states, that it bears S. E. by E. 2 ½ leagues from the Round Island or Rodondo, and 5 leagues S. E. by S. from Wilson's Promontory.

KENT'S GROUPS, in lat. 39° 29′ S. lon. 147° 17′ E. (the body) bearing *true* east from Sir Roger Curtis Isles, distant about 9 or 10 leagues, consist of two detached groups, the smaller lying about 2½ or 3 leagues to the W. S. W. of the largest isles, one of them being of a remarkable form, and called Judgment Rock. All these isles are steep, rocky, and barren, and the two largest may be seen at 10 or 12 leagues distance, between which, there is a safe channel, where small vessels might be sheltered from easterly or westerly winds, in 2 small coves, with sandy beaches at their head. The large isles have also a safe channel between them and the small group to the westward. Kent's Groups, geo. site

THE PYRAMID, in lat. 39° 48′ S. is a high rock, bearing *true* S. by W. from the body of Kent's Group, distant about 5½ or 6 leagues; another rocky islet, called sometimes Wright's Rock, lies about 4 or 5 leagues to the S. E. of Kent's Group, and about 2½ leagues farther in the same direction Craggy Island is situated, nearly at equal distance W. N. W. ward from the N. W. end of the Great Furneaux's Island. Pyramid. Wright's Rock. Craggy Island.

THE CHANNELS between all these groups of islands from Wilson's Promontory to Furneaux's Islands, are safe in the day time with moderate weather, taking care to avoid the Crocodile Rock, if the channel between Rodondo and Sir Roger Curtis' Isles be adopted; but great caution will be necessary, if a stranger should attempt to pass through any of them in the night. Channe's.

BANKS' STRAIT, formed between Furneaux's Islands and the N. E. end of Van Diemen's Land, is also safe, but not so much frequented, nor so wide as the channels to the northward; and it lies out of the direct route of ships coming from the westward through Bass Strait, and bound to Port Jackson, or other parts to the northward. Banks' Strait.

BASS STRAIT, should be approached with caution, by ships coming from the westward, if not certain of their latitude, which ought to be correctly ascertained, before they reach lon. 143½° E.: and the Strait ought not to be entered in the night, unless the land has been previously seen, or both the latitude and longitude be known by observation. The parallel of 39° or 39° 20′ S. according as the wind may incline, is the best track for passing between King's Island and Cape Otway; and a sight of either, or preferably of both, will point out the true situation. Directions for approaching and sailing through Bass' Strait.

Westward of the north end of King's Island at 10 leagues distance, there are soundings from 65 to 70 fathoms sand, which will indicate the proximity of the Strait in thick weather. The only danger to be apprehended here, is the Harbinger's Reefs, two patches situated nearly 2 leagues to the N. W. of the north end of King's Island; but are so far separated from it, and from each other, as to leave practicable passages between them, where the shoalest water found by the Cumberland schooner was 9 fathoms.

Having passed the north end of King's Island, a course should be made good from it true east for Sir Roger Curtis' Island, and part of this distance may be run in the night with a good look out: the soundings in this track to the eastern part of the Strait are regular, from 35 to 48 fathoms fine sand and shells. The best track, is on the south side of Sir Roger Curtis' Isles, and on the same side of Kent's Groups, at not a greater distance from the largest than 2 leagues; then steer E. N. E. by compass, if nearly before the wind, or on either side of this course, as the wind may incline, taking care not to approach the northern Long Beach formed between Wilson's Promontory and Cape Howe, which becomes a concave lee shore with a S. E. gale. This makes the channel south of Kent's Groups preferable to those between them and Wilson's Promontory; but with a steady N. W. wind and settled weather, either of the channels south of Rodondo might be pursued occasionally; then a course steered well to the eastward to give a birth to the Long Beach, and Cape Howe may be rounded at any reasonable distance.

Anchoring places with easterly winds.

The most convenient places for anchoring in the Strait with easterly winds, are, (according to Capt. Flinders, from whose survey, the preceding directions for Bass Strait are chiefly taken) under the N. W. end of King's Island, near the New Year's Isles. Port Phillip, anchoring just within the entrance, on the south side: when a fair wind comes, a ship can get out of the port by help of the strong tides. Hunter's Isles, between Three-Hummock and Barren Islands; taking care not to anchor too close to the weather shore, lest the wind change suddenly. On the west side of Wilson's Promontory, *in a case of necessity*; but this place is dangerous, should the wind change suddenly to S. W., as a deep bay is formed between the Promontory and Cape Liptrap. Kent's Large Group, for brigs and small vessels, in one of the small sandy coves under the eastern island. Furneaux's Islands, between Clarke's and Preservation Islands; and if a ship be not able to weather Clarke's Island, and pass out to the S. E. ward through Bank's Strait when the wind comes fair, she may run through Armstrong's Channel, with a boat a-head and a good look out.

Port Phillip.

PORT PHILLIP, is the westernmost harbour on the north side of Bass Strait, distant 17 or 18 leagues to the N. Eastward of Cape Otway, and the entrance is in lat. 38° 19′ S., about 4 leagues to the eastward of a bluff headland without trees, rising from low land thickly wooded. The soundings about 3 miles from the entrance are 12 and 13 fathoms, decreasing to 7 or 8 fathoms near it, and until 3 or 4 miles within the entrance, irregular from 6 to 12 fathoms. A reef projects from each side of the entrance, and the ebb tide runs out of it at the rate of 5 or 6 miles an hour on the springs, resembling breakers. Although this is an excellent harbour, or rather a very extensive lagoon, having a rivulet falling into the upper part of it, there is no fresh water in the vicinity of the entrance, the nearest being found at the S. Eastern angle of the harbour, to the westward of the hill called Arthur's Seat.

Western Port.

WESTERN PORT, entrance, in lat. 38° 31′ S. distant about 8 or 9 leagues E. S. E. ward from Port Phillip entrance, is formed by Cape Schanck on the west side, and the west point of Phillip's Island called Point Grant bounds its eastern side. The north side is lined by shoals, which makes it necessary to keep near to Point Grant and the north side of Phillip's Island, in steering in E. N. E. ward into the port. This harbour may be chosen as a place of shelter, if a ship is driven near its entrance by a southerly gale, being much wider than the entrance of the former port; and there is fresh water up a rivulet at its S. Eastern angle.

The coast between Port Phillip and Western Port, presents a continued barrier of rock, with a heavy swell generally tumbling in upon it from the S. Westward.

Sealer's Cove.

SEALER'S COVE, at the eastern angle of Wilson's Promontory, has depth of water for a ship, and room for a small vessel to swing, with plenty of wood and fresh water: it is

only open from E. N. E. to E. S. E. but these winds throw in very little sea; the tide rises 10 or 11 feet, high water 2 hours before the moon passes the meridian. Seal Islands lie N. E.ward from the Cove.

WINDS NEAR CAPE LEEUWIN, blow generally from westward; in summer, varying from N. W. in the night, to S. W. in the latter part of the day, though not regular, and in winter this variation is not experienced. A long swell appears to come at all times from S. W.ward, indicating that the strongest and most durable winds blow from that quarter, which is confirmed by experience. Winds near Cape Leeuwin, and from thence to Bass Strait.

From the Archipelago of the Recherche, along the south coast to Bass Strait, from the middle of January to the middle of April the prevailing winds are between S. E. and E. N. E.; coming more from the land at night, and from sea in the day, but seldom strong; whereas, the winds which occasionally blow from westward, are always fresh, and sometimes become gales, veering in this case, invariably to the S. W.

In Bass' Strait, the gales and strongest winds come from S. W., and during 9 months of the year, they generally blow from the western quarter. In January, February, and March, easterly winds with fine weather are not uncommon; but these are not to be depended on at any other season. The gales usually come between S. W. and S. E., most frequently from the latter direction, rendering it hazardous to approach the coast between Cape Howe and Wilson's Promontory. At the eastern side of the Strait, and of Van Diemen's Land, north or N. E. winds not unfrequently happen, but seldom blow strong. Gales in Bass Strait,

Off the south coast of Terra Australis, speaking generally, it may be considered, that during the 6 or 8 winter months, the winds blow almost constantly from some western point; and that gales of wind at S. W. are frequent. The progress of the gales, is usually this: the barometer falls to 29½ inches, or lower, and the wind rises from the N. W. with thick weather, commonly with rain; it veers gradually to the west, increasing in strength, and when it veers to the southward of that point, the weather begins to clear up; at S. W. the gale blows hardest, and the barometer rises, and by the time the wind gets to south or S. S. E., it becomes moderate, with fine weather, and the barometer above 30 inches. Sometimes, the wind may return back to west, or more northerly, with a fall in the mercury, the wind diminishing in strength, or dying away; but the gale is not over, although a cessation of a day or two may take place. In some cases, the wind flies round suddenly from N. W. to S. W., and the rainy, thick weather, then continues a longer time. and on the South Coast,

Such is the usual course of the gales along the South Coast and in Bass' Strait; but on the east side of the Strait, the winds partake of the nature of those on the East Coast, where the gales often blow hardest between South and S. E., with thick weather, and frequently with heavy rain. and East Coast.

The barometer rises generally with southerly winds on the South Coast, and falls with northerly winds. On the south, east, and west coasts of Terra Australis, sea winds mostly always rise the barometer when the weather is moderate, and it falls with land winds. Barometer.

Northerly winds do not prevail near the land, but in lat. 40° and 44° S. to the westward of Van Diemen's Land, strong north and N. N. E.* winds often happen, shifting sometimes suddenly to N. W. and westward. Northerly winds to the west of Van Diemen's Land.

Several ships have experienced these northerly winds when steering for Bass' Strait, which drove them to the south of that route, and obliged them to proceed round Van Diemen's Land. In July, 1802, the Perseus running in lat. 40° S. for Bass' Strait, had strong north and N. N. E. winds, with a southerly current, several degrees to the westward of the Strait, which forced her to go round Van Diemen's Land: here the winds were very changeable, much from S. E.ward, with northerly currents till her arrival at Port Jackson late in July.

* These winds also happen in the same latitudes, from the meridian of Cape Aguilhas to Van Diemen's Land, and sometimes shift in a similar manner.

In Nov. 1800, the Royal Admiral in lat. 43° to 44° S. running east for Van Diemen's Land, had the winds mostly at N. N. E. and N. W.; sometimes at West and W. S. W. When round Cape Van Diemen, she had north and N. E. winds 3 days, then variable between east and S. S. W. till her arrival at Port Jackson on the 20th of November.

Current from Cape Leeuwin to Bass' Strait.

CURRENT, NEAR CAPE LEEUWIN, is separated into two branches, one running northward along the west coast of Terra Australis, and the other branch runs to the eastward along the South Coast; which Capt. Flinders attributes to the strength of the prevailing S. W. winds, impelling the water of the ocean toward the land, and this meeting with the Cape, is deflected in different directions as mentioned above. From Cape Leeuwin to King George's Sound, the current was found to set eastward in May and December, about 27 miles daily. From thence to a little beyond the Archipelago of the Recherche, in with the shore, it set N. E. 13 miles; and at a considerable distance from the coast, it ran N. E. by E. 16 miles per day, the wind being more from the south than from the northward in both cases.

In coasting all round the Great Australian Bight, from the Archipelago to Cape Northumberland, very little current was perceived, and it generally followed the impulsion given to it by the winds; but in May, crossing the Great Bight, it ran about 14 miles per day to N. E. ward, the winds prevailing strong from the southward.

In Bass' Strait, the current does not set to the eastward in common cases, as the flood comes from that direction, and flows westward to Hunter's Islands and King's Island, where it meets another flood from the southward: but the Bight on the north side, between Cape Otway and Wilson's Promontory, lies out of the direct set of the tides. Nevertheless, if the wind blow strong from the westward, it will be prudent to allow for an easterly current, which during a west and S. W. gale, has been found to set S. 73° E. about 35 miles in one day.

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## *DANGERS near the WEST COAST of NEW HOLLAND,*

### NEAR SANDELWOOD ISLAND, AND TIMOR.

Island Rottenest.

ROTTENEST ISLAND, in lat. 31° 58′ S., is the southernmost island situated at a considerable distance from the west coast of New Holland. By the Dutch accounts, it is about 5 leagues in length, extending E. and W., covered with trees, having soundings from 10 to 16 fathoms round it; and it lies opposite to Black Swan River, about 10 leagues off shore, having several islands between it and the main-land to the S. Eastward.

Houtman's Abrolhas, dangerous shoals near the Coast of New Holland.

* HOUTMAN'S ABROLHAS, situated between 28° and 29° S latitude (from Van Keulen's account) are the same on which the ship Batavia in 1629, and the ship Zeewyk in 1727, were lost. The crew of the last ship, found them to consist of 10 or 12 Sandy Islands, united to one another by reefs; supposed to be 32 or 36 miles from the main-land, which was not seen from the shoals: between these shoals and the coast, the sea is clear with deep water. On the easternmost Island, lying 16 miles distant from them to the S. E. they found some pieces of wrecks, and a little underwood; but no fresh water was got in the pits which

* West from these, in lat. 28° 20′ S. lon. about 98½° E., a rock above water is said to have been seen in June 1774, by a Danish ship. Very doubtful.

they dug, though Peisart in 1629, found good water on one of the Islands, in two small holes: the said crew built out of the wreck a vessel, wherewith they arrived at Batavia.

Captain Daniel, in the London, saw these shoals in June 1681. "With the wind S. W. by W., steering by compass N. E. by E., at 10 A. M. the water was discoloured; a man at the fore-top, saw a breach rise a head of us; we put our helm hard a-starboard, and stood away N. W. by W., and weathered the N. W. end of it about ½ a mile; at that distance the depth was 35 fathoms white corally ground, with some red mixed; next depth (about two hours after we tacked) was about 40 fathoms, the same ground; and at 9 P. M. having ran off by log on a N. W. by W. course, about 24 miles, had no ground at 65 fathoms.

"The breach, which we first saw, happened to be the northernmost of all, there being several; and by our computation are near 20 miles in length. Within the breaches, several small white sandy Islands were seen, with some bushes on them: a very heavy sea broke against the south part of these shoals. When close to them, the mainland was not seen."

SHARK'S BAY, of Dampier, on the east side of Dirk Hartog's Island and Road, is a spacious and safe harbour, in lat. about 25° S. There are two channels leading to this bay; one in lat. about 25° 15′ S., between Dirk Hartog's Islands and Barren Island, the other to the northward of the latter, in lat. about 24° 25′ S., between a high red sloping point on the main and these islands. Barren Islands extend north and south along the N. W. part of the Bay, and Dirk Hartog's Island secures it from the sea to the S. W. and westward. These Islands facing the sea in this part of the coast, are in lon. about 113° 10′ E., and have soundings several leagues to the westward of them. Shark's Bay, and circumjacent coast. Geo. site.

The land around Shark's Bay, is sandy, barren, destitute of inhabitants, fresh water,* or other necessaries; but as the approach to this part of the coast is safe, ships have frequently made it here. To the southward of Dirk Hartog's Island, in lat. 26° S., it should not be seen by any ship bound to the northward, that the vicinity of Houtman's Abrolhas may be avoided.

CLOATES ISLAND, is very little known, having been seen by few navigators, although placed in charts published a century ago. Captain Nash, of the imperial ship House of Austria, is said to have seen it in 1719, and named it Cloates Island. This was at 5 A. M., the weather very clear, sounded, and had no ground 100 fathoms, though not more than from 2 to 4 miles off shore.

The day before, and several days after, much sea-weed, and small birds like lapwings, both in size and in flight, were observed. Captain Nash made the latitude of this island 22° S., the variation 6° 30′ Westerly; and from it he made 3° 06′ Easting to Bally Island, and 7° 26′ Westing to Java Head. Cloates Island, is said also to have been seen in 1743, by the Haeslingfield; at day-light bearing from S. E. ½ S. to E. by S., distant about 6 leagues. According to the description of both ships, it is about 8 or 10 leagues in extent, N. E. by N. and S. W. by S., of moderate height, level, with a gradual slope at both ends, and high breakers projecting about 3 miles from them. Situation of Cloates Island by different accounts.

It cannot be seen at a great distance, even in clear weather. By the Haeslingfield's account, this Island is in lat. 22° 07′ S.; their variation the preceding morning was 6° 17′ Westerly. They steered from it nearly north, for 7 days, when they made the land of Java, in lat. 8° 30′ S.; and in 3 days more, made Java Head in 7° 12′ W. lon. from Cloates Island.

The longitude made by these two ships from this Island to Java Head, agrees within 14 miles of each other; allowing Java Head in lon. 105° 11′ E., Cloates Island will be in 112° 30′ E., by mean of the longitude made by both ships, or 1° 46′ W. from the Coast of New Result.

* Such parts of the West Coast, as the Dutch examined, were found destitute of fresh water.

Holland; this Coast in lat. 22° S. being in lon. about 114° 16′ E. In some charts this island is placed in lon. 110½° E., and in others, much farther to the westward, which seem to render its situation very uncertain, and even its existence doubtful; particularly, as none of the ships running for the Coast of New Holland, have fallen in with it these 70 years past.

Its existence doubtful.

An island on the coast of New Holland mistaken for it.

Cloates Island, has also been supposed, to lie very near the coast of New Holland. The Belvedere's journal states, January 12th, 1796, at ½ past 8 A. M. steering E. ½ S., saw Cloates Island on the lee bow, bearing E. by N. 5 or 6 miles, hauled up N. N. W.; at 9 the Island E. ½ S. to S. E., breakers off each end from E. to S. E. by E., in 25 fathoms. Steered N. ½ W. 3 miles to 10 A. M., a bluff point of land then seen from the mast-head S. E. ½ E., distant 8 or 9 leagues, in 25 fathoms. Steered N. E. by N. 4 miles, N. E. 6 miles to noon, the observed lat. 21° 10′ S., then the body of Cloates Island seen half-way up the mizen shrouds, bearing S. by W., distant 4 or 5 leagues in 38 fathoms. Wind at N. W. and westward. From noon, steered N. E. 9½ miles, then saw the coast of New Holland from the deck, hauled on a wind N. N. W., being in 17 fathoms red coarse sand, at ½ past 1 P. M., January 13th. At 2 P. M., the southern extreme, a bluff point, with high breakers, extending out to a great distance S. 78° E., the northern extreme N. 50° E., the nearest land N. 76° E. distant 5 leagues.

This was evidently not Cloates Island, seen in the Belvedere, but some of the low islands in the bight to the eastward of the N. W. Cape of New Holland; as the island and land she made, are to the northward of the Cape.

Tryal Rocks very uncertain.

TRYAL ROCKS, like Cloates Island, their position is very uncertain, no modern navigator having seen them. They are named from the English ship Tryal, said to have been lost upon them in 1622. A Dutch sloop sent from Batavia to explore them, in consequence of one of their ships* having seen them in 1718, marks in a plan, the extent of the whole range E. and W. about 40 miles, and about 15 miles broad, in lat. 19° 30′ S., 80 leagues from the coast of New Holland. They are placed in different latitudes; in some of the old charts, from 19° 45′ S. to 21° S., and on the meridian of Java Head; also from 1° to 2°, both to the eastward and westward of this meridian. In July, 1777, Captain Matthias Foss, of the Dutch ship Fredensberg Castle, saw the Tryal Rocks, and made them by good observation, when they bore E. distant 12 miles at noon, in lat. 20° 40′ S., meridian distance 23° 45′ E. from St. Paul, but by the run afterwards, S. ½ W. 840 miles from Java Head. The Danish account says, "these rocks lie N. W. and S. E. and extend in length 24 miles; the centre of them appears very broad, and not higher out of the water than a small vessel's hull; the extremes are clusters of small broken rocks, now and then appearing as the sea retires, and are about 4 miles from each extreme of the main rock."

Different accounts.

Geo. site of a bank of stiff clay.

In 1770, the Harcourt, Captain Nathaniel Paul, is said to have sounded in 40 fathoms stiff clay, on a bank which they reckon in 21° 00′ S. lat. and 28° 30′ E. from St. Paul, or about 106° 23′ E. lon.

Captain L. Wilson, in the Vansittart, July 5th, 1789, thought they had soundings 75 fathoms stiff mud, and broke the deepsea line, in lat. 20° 54′ S. lon. 105° 25½′ E., which Captain Wilson called the Harcourt's Bank: but as no soil came up on the arming of the lead, the quarter-master was probably deceived.

Doubtful.

* Van Keulen says, they were seen in the ship Vaderland Getrouw, found to lie in 20½° S., and that she had 57 to 65 fathoms fine soft sand, when they bore E. N. E. 8 miles. The Jane Frigate's journal, has the following remark; June 27th 1705, according to custom, hove to, on account of the Tryal Rocks, (if such rocks exist) for although they are reported to extend 20 leagues in length, I was informed by the Commodore of the Dutch ships, with whom I went home last voyage, that he never heard of these rocks having been seen. If they exist, they must lie much farther east than in the route toward Java Head, or they must have become more familiar to us.

Captain Wilson searched for the Tryal Rocks, as placed from the Danish account, and remarks, that neither these nor the island laid down in Thornton's chart exist, near lat. 20° 50′ S. betwixt lon. 104° 41′ and 105° 44′ E. He also observes, that the Lascelles, in 1789, passed lat. 20° 50′ S. in lon. 104° 12′ E. by chronometer; and that he passed the same latitude in the Carnatic, in 1786, in lon. 103° 34′ E. by chronometer; then concludes with this useful remark. Probable situation of the Tryal Rocks.

"If rocks of the Dane's description were situated within these limits, i. e. betwixt 103° 34′ E. and 105° 44′ E., it is barely possible, that the Lascelles, the Carnatic, and the Vansittart could have passed without seeing them; and I have not a doubt, if the tracks of other direct ships, with chronometers on board, were examined, even these limits would be extended to the westward, in which no such island, or rocks can lie. Whoever, therefore, would look for the Tryal Rocks, as reported by the Dane, will do it with much greater probability of finding them to the eastward of 105° 44′ E., then to the westward of that limit."

As the Danish account places the Tryal Rocks about 44 miles to the westward of Java Head, or in lon. about 104½° E., and the Dutch account within 80 leagues of the coast of New Holland, upward of 10° more easterly; it may be inferred, that it cannot be one and the same, but two different shoals seen by them; the latitude differing also more than one degree, strengthens this opinion. And we are still left in doubt, whether or not the Tryal Rocks and Cloates Island have any real existence.

A REEF bears N. W. by compass, distant about 9 or 10 miles from Rosemary Island, on the coast of New Holland, in lat. 20° 18′* S., by the account of Captain Clark, who saw it in a whaler; there is from 7 to 9 fathoms water, close to the rocks. Dangers near New Holland.

The same navigator says, a dangerous shoal bears N. 49½° E. from the N. part of Rosemary Island, distant about 230 miles. When it bore E. 3 or 4 miles, he had observations of ⊙ ☾, which made the N. part of this shoal in lat. 17° 28′ S. lon. 119° 02′ E.

INPERIEUSE SHOAL, discovered by Captain Rowley in 1800, is probably the same as the above. "H. M. S. Imperieuse, Dec. 30th, 1800, at day-break, saw a shoal extending about 3 miles from N. E. to S. W. On the S. W. end, shoal water with high breakers; the N. E. part a low sand, in some places covered with water, and several small rocks appearing above the surface. Imperieuse Shoal.

As far as could be seen from the main-top, when the shoal bore from N. by E. ½ E. to W. N. W. ½ N. distant 2½ miles, the water appeared discoloured; and in many parts high breakers were observed. Its lat. from noon observation 17° 35′ S lon. 118° 27′ E. by account; no ground with 90 fathoms line. By observations of ☽, 8 days afterward, the ship was about 10 miles to the westward of account."

The Imperieuse Shoal, seems also to have been seen by the ship Good Hope, from Banda, bound to Batavia, in 1813, on the 14th February: when under a closed reefed maintopsail and foresail, with a N. W. wind and heavy sea, head to the S. W., saw at ½ past 11 P. M. breakers a-head and on the lee bow, instantly wore, and set more sail. At 4 A. M. the weather more moderate, wore, and at 8 saw the breakers from the mast-head, bearing west. At 9½ A. M. tacked within 1½ mile of the shoal, no ground 150 fathoms, it then bearing from N. N. W. to S. W. ½ S., the N. Eastern extreme being distinctly seen, but breakers were visible to the S. W. as far as the eye could reach from the mast-head. Several spots of dry sand appeared, and on the north end of the shoal were black rocks, on which the sea broke very high. At noon, observed in lat. 17° 47½′ S., the north extreme of Seen by the Good Hope.

* Dampier, who named Rosemary Island, places it in lat. 20° 21′ S. (the Belvidere's noon observation will make the island seen by her in 21° 23′ S.) Dampier says it is 6 leagues long, and 1 in breadth, with several islets about it. No water could be found there.

88382

the shoal bearing west about 5 miles, and we made that part of it in lon. 119° 18′ E. by chronometer, and in 119° 21′ E. by an observation of the moon, and Aldebaran taken 8½ hours afterward. The chronometer was found to be very correct, when we made Christmas Island on the 7th of March following.

Dampier's Shoal.

DAMPIER'S SHOAL, according to the account given in the voyage of this celebrated navigator, lies S. by W. from the *eastern* part of Timor, in lat. 13° 50′ S. He describes it to be a small sandy bar, that shews itself on the surface of the water, surrounded with rocks, which appear 10 feet above water: it is of triangular form, and each side about 1½ league long; no ground at ½ a league distant from it.

This shoal seems to be in lon. about 122° 36′ E. by Dampier's account, in a run of 2 days from the S. W. end of Timor.

Cartier struck on a shoal, probably that seen by Dampier.

The Cartier in 1800, struck on a shoal, March 6th, at midnight, apparently Dampier's Shoal. It was then blowing strong from the westward, the ship under double-reefed topsails, "Hove all aback, and got off. While on the rock, which was 8 or 10 minutes, had 5 fathoms rocks over the stern."

"This shoal, I am led to believe," says Captain Nash, "is of great extent, as we had ran along for about 20 minutes in much smoother water, and which, I think, was occasioned by rocks or breakers to windward, (as we had a very heavy sea before and after) although not any in sight of us."

Another account adds, "That the ship from being in a heavy sea, suddenly came in smooth water, and ran 2¼ miles, before striking. Although nothing was seen above water, it is very probable there are rocks, or a sand above water, of considerable extent, on account of the sea being so smooth."

Geo. site.

"These rocks, we suppose, are those seen by Dampier in 1688, but are placed very erroneously on the charts. The latitude brought forward from the preceding noon is about 13° 58′ S. and the longitude brought on from the last sights, per watch 122° 20¾′ E.

One of this ship's journals states, that the longitude by chronometer, when she struck, was 122° 03′ E.; and another account says, the lat. was then 13° 57′ S. and the lon. 121° 55′ E. by chronometer.

Capt. Heywood's account of a reef.

SCOTT'S REEF, is probably that seen by the ship Cartier, and by Dampier: Captain P. Heywood, in H. M. S. Vulcan, gives the following description of a reef, seen by him, February 22d, 1801. "At noon, in lat. by account 13° 46′ S. lon. 122° 19′ E. by chronometers, or 97 miles due E. from the position assigned to Dampier's Rocks, in Robertson's chart, when the man at the mast-head discovered a long range of breakers at 1 P. M. This reef on all parts is even with the water's edge, and the breakers only visible. The N. W. end is in lat. 13° 52½′ S. and lon. 121° 59′ E. From thence it extends about S. 62° E., 18 or 19 miles to the N. E. point, in lat. 14° 01′ S. and lon. 122° 16′ E.; from each of these points, it takes a sharp turn to the southward, but the extent of either tail in that direction, I know not, as they both broke in the mast-head horizon.

This day, unfortunately, was gloomy, which deprived me of a sight of the sun; but the course was free, and the distance run from the preceding noon not great, the error in the log account, I think could not have been much. The nearest land to this dangerous reef, is Red Island, on the coast of New Holland, from which it bears N. 62° W. distant 143 miles."

Captain Heywood, observes, that as this *Reef* differs essentially in situation, from that assigned to Dampier's *Rocks* in the charts; of much greater magnitude, and not answering the description given by Dampier, he cannot say if it is the same; but thinks it should be considered as another danger, that ships may be on their guard against both. He therefore named it *Scott's Reef*, after the man at the mast-head, who first saw it. There seems

By him called Scott's Reef.

little reason to doubt, that this and the shoal on which the Cartier struck in the night, are the same; the positions agreeing so nearly, although computed from the observations of the preceding days, and the Cartier having experienced very smooth water for a considerable time, give cause to think, they are one and the same shoal.

It also agrees nearly with the position Dampier assigned to the rocks seen by him; although his description of rocks 10 feet above water, and the extent of the shoal, differs from Captain Heywood's remarks; but this difference, might arise, from being viewed at high and low water, as the tides rise considerably hereabout.

Sahul Bank, geo. site.

SAHUL BANK, and other Banks or Shoals between Timor and the coast of New Holland, are imperfectly known. The Sahul Bank is projected on the charts as dangerous and rocky, of great extent, the west end of it commencing nearly due east from the south part of Rotto, and about 16 or 17 leagues from the south point of Timor; from thence stretching to the eastward upward of 2°, betwixt 10° 40′ and 11° 30′ S. lat. There is reason to think this Bank is not so extensive as here mentioned, but many other coral banks, some of which are very dangerous, lie to the southward of it, at a great distance; and one of these was seen in the Cartier, March 5th, 1800, the day before she struck on another shoal, which has been already described.

Other banks.

Cartier's Bank.

The Cartier, left Amboina, February 12th, 1800, with a cargo for England; she had westerly winds, and passed the east end of Timor 22d: strong westerly winds prevailed when to the southward of this island. "March 5th, at 5 P. M. saw a DRY SAND BANK, bearing S. 40° W. about 4 miles; a shoal joins it to the northward, and the danger appears to be about 4 miles in circumference. We were going so fast through the water, could not heave the lead. From noon observation, it lies in lat. about 12° 29′ S. and by a good chronometer, in lon. 123° 56′ E., allowing Amboina to be in 128° 14′ E."

The following danger, seen by Captain Ashmore of the Hibernia, appears to be a late discovery.

Hibernia's Shoal.

May 8th, 1810, at 8 A. M. saw from the mast-head, TWO SMALL SAND BANKS, distant 5 or 6 miles to the S. Westward, and situated upon a shoal, the breakers on which appeared to extend nearly east and west about 4 miles. The two Sand Banks lie near the centre of the Shoal, elevated about 10 feet above water, and each appeared to be in extent about a cable's length.—At 9 A. M. the Shoal bore from S. S. E. to S. W. by S. distant about 3 miles, and some rocks were visible above water upon its western extreme. This Shoal was found to be in lat. 11° 56′ S., lon. 123° 28′ E. deduced from Port Jackson by chronometer, in a run of 34 days through Torres Strait.

Southern route from Amboina.

Captain P. Heywood, passed over many of the Banks between New Holland and Timor. January 1st, 1801, in H. M. bomb vessel, Vulcan, with three transports, under convoy, he left Amboina, and was ordered to proceed to Madras by the southern route; January 8th, owing to the indifferent sailing of the ships, and the wind veering from W. N. W. to W. S. W., he was obliged to pass to the eastward of Wetter, and next morning he passed the east end of Timor.

New Holland; a part of the coast described,

Having a strong monsoon to the southward of this island, veering between W. N. W. and W. S. W. with a heavy sea, and gaining no ground, he stretched to the southward, and on the 23d, made the coast of New Holland in lat. 15° 09′ S. and lon. 124° 22′ E. This part of the coast was low, the aspect barren and sandy. An island of the colour of red ochre, situated about 5 or 6 miles from the main, is very conspicuously seen in contrast with the low land behind it, which lies in lat. 15° 09′ S. lon. 124° 22′ E., and named Red Island.

Soundings on the Sahul Bank, and other remarks.

On this part of the coast the soundings were regular, the bottom green ouze; at 5 leagues distance, to the N. W. of the island, 35 fathoms, deepening gradually to 60 and 70 fathoms, as far to the northward as lat. 13° 40′ S. From Red Island, with strong westerly winds, he stood back to the northward, and at noon, January 28th, saw the water discoloured a-head;

immediately after got ground in 30 fathoms water on the edge of Sahul Bank; shoaled quick, and tacked in 19 fathoms; when about, had only 12 fathoms. The water was very clear, and the bottom appeared white sand, with coral patches. The part where 12 fathoms was got on the southern edge of the bank, is in lat. 11° 34′ 50″ S. and lon. 124° 14′ E. From this position (Captain Heywood remarks, that) the western extremity of the shoal appeared to extend some miles to the W. N. W., as the water was much discoloured in that direction. To the eastward, the shoal water extended beyond their mast-head horizon, although, on the 20th January, when they tacked in lat. 11° 35′ S. lon. 125° E. no ground was obtained at 59 fathoms, nor any appearance of shoal water from the mast-head.

Discovery, geo. site, and description of other banks.

From the edge of the Sahul Bank they stood to the southward, with strong westerly winds and squally weather; on the 31st, at 9 A. M. shoaled suddenly from no ground to 15 fathoms, wore instantly, and saw the coral rocks and sand under the ship, carrying 12, 10, and 9 fathoms; when about, deepened as quick to 20, 60, and 70 fathoms. This shoal is in lat. 13° 25′ S. lon. 124° 12′ E., and on the preceding day, 30 fathoms was got only 2 miles farther southward. February 2d, past 1 P. M. they shoaled again suddenly from 65 into 12 fathoms, and had only 7 fathoms when about, the bottom (distinctly seen) white sand and coral rocks, this position being in lat. 12° 46′ S. lon. 124° 32′ E. Being thus embarrassed between the Sahul, and these, *perhaps*, dangerous shoals, they were obliged to stand to the northward, had a gale from westward, and then light winds till the 6th, when the depth again decreased from 60 fathoms quick, to 20 and 17 fathoms coral. This third discovered shoal is in lat. 13° 32′ S. lon. 124° 29′ E. After tacking from it, the depth quickly increased to 70 fathoms. With constant westerly winds, beating about till the 21st, they tacked in 10 fathoms, coral bottom, about 4 miles to the eastward, and 1 mile to the southward of the place of the bank discovered on the 2d. Captain Heywood, observes, that between the parallels of 11° 30′ S. and 13° 40′ S. and the meridians of 124° and 125° E. is a space interspersed all over with banks of sand and coral rocks, shooting up out of deep water, the soundings near them irregular; but close to them, the bottom was generally coarse sand and bits of shells; farther off, fine white sand; and when clear of them altogether, a sort of green sandy ouze.

Whose positions are well determined.

The positions of these banks were correctly ascertained by two excellent chronometers, corroborated at times by lunar observations. Although he saw no breakers on any of them, there can be no doubt of danger existing on some of these banks, which is rendered certain, by the Cartier and Hibernia having seen dry sand banks; and although these dangers were not seen by Captain Heywood, he must have passed within a few leagues of the shoals discovered by those ships.

We may, from the observations of this scientific navigator, and those made in the Cartier and Hibernia, infer, that there are many Banks, at considerable distances from each other, in the sea between New Holland and the Island of Timor, some of which are dangerous; and that probably, the northernmost of these banks is the Sahul Bank of the charts, not of so great extent as generally delineated.

Southern route from Amboina; another bank seen, and its geo. site.

The Bellona, and Echo, had also soundings on one of these banks. They left Amboina Jan. 1st, 1798, passed to the eastward of Wetter and Timor; afterward, with strong westerly winds, they continued to beat from January 5th, (sometimes in sight of the island) till the 12th. In the Echo, at 8 A. M. they saw the rocks under her bottom, and had 14 fathoms sand by the lead, the lat. 11° 16′ S. lon. 125° 50′ E. by chronometers. This, perhaps, was the eastern part of Sahul Bank, or another Bank detached from it to the eastward. From hence they had W. N. W. and N. W. winds till in lat. 14° S. lon. 121° E. the 19th; westerly and N. W. winds continued till the 31st, in lat. 17° S. lon. 115° E., then veered to S. S. W. and to S. on February 3d, in lat. 17° S. lon: 110° E.

# *SAILING DIRECTIONS from ST. PAUL, toward the NORTH-WEST CAPE of NEW HOLLAND,*

## AND THE STRAITS EAST OF JAVA.

THE MOST ELIGIBLE ROUTE for ships late in the season, which are bound to China direct, if they are in the vicinity of St. Paul, part of September, October, November, and December, is to proceed through some of the Straits east of Java, and then enter the Pacific Ocean by Macassar Strait, the Molucca Passage, Gillolo Passage, or by Dampier's Strait. To proceed from St. Paul to China, late in the season.

Probably, the most preferable of these, is the Ombay Passage, that is, to make Sandalwood Island, and pass between Timor and the Islands to the northward of it, haul close round the east end of Ombay to the northward, and pass to the westward of Bouro, if the wind permit, or between it and Manipa; then through the Pitt's passage, and enter the Pacific Ocean by Dampier's Strait, or by the Gillolo Passage.

If late in January or February, before a ship pass St. Paul, she ought not to enter the Pacific Ocean, but steer through Allas or Lombock Straits, then through Macassar Strait, and between Baseelan and Mindanao, or to the southward of Baseelan into the Sooloo Sea, and along the west side of Mindanao, Panay, Mindora, and Luconia; where she will find the winds favorable for getting to the northward.

It has generally been the practice with ships destined for the Straits between Java and Timor, to make the Coast of New Holland. With good chronometers, and other instruments on board for obtaining lunar observations, this is not requisite. The N. W. Cape of New Holland, may in such case, be passed at any convenient distance judged prudent, according to the season of the year, and the Strait intended to be taken. It must be remembered, that southerly and S. W. winds prevail greatly on the west coast of New Holland, from Cape Leeuwin the S. W. extremity, to the N. W. Cape; and this southerly wind is generally experienced near the shore, although at a distance from it, the S. E. trade wind may be expected at all seasons near the tropic. Prevailing winds, &c.

From April to November, the easterly monsoon blows along the shores of Timor, Sandalwood Island, Sumbawa and Java; at this season, S. E. and Easterly winds may be expected in the sea between these Islands and the N. W. part of New Holland; but in November, December, January, February, and March, when the westerly monsoon should prevail along the shores of the islands mentioned, the winds are often very variable between New Holland and these Islands, though generally from westward.

Ships departing from the N. W. Cape of New Holland in these months, lose the southerly winds frequently in 19° to 15° S. latitude, which are followed by light variable breezes at first, and afterward by the westerly monsoon. In December, January, and February, the westerly monsoon often blows strong, with squally weather and rain, between New Holland and the Islands to the northward, producing a current to the eastward. At such times, a ship should make the land to the westward of the Strait to which she is bound; and to the eastward of the same, when the easterly monsoon is prevailing. A caution in steering for any of the Straits east of Java.

When the westerly monsoon is expected, ships bound to Bally, Lombock, or Allas Straits, certainly have no occasion to make the Coast of New Holland; but may pass the N. W. Cape at any discretional distance, and steer direct for the Strait to which they are bound; if the southerly winds fail in from 18° to 14° S. latitude, and are followed by the westerly monsoon, they should take care not to fall to leeward of the intended Strait, for the wind is often at W. N. W., and sometimes at N. W. along the southern coasts of the islands, between Java Head and Timor. In passing the N. W. Cape of New Holland.

Avoiding dangers.

In running across the S. E. trade, care is requisite, on account of several dangers to the westward of New Holland, and to the northward of the tropic; the true situations of which, are very imperfectly known.

DURING WAR, should it be thought unsafe to proceed through Sunda Strait, or by Malacca Strait, ships bound to China, may, after passing St. Paul, run to the eastward with the westerly winds at any season of the year, not decreasing the latitude under 30° S. in winter, nor under 35° S. in summer, till they have increased the longitude 16° or 18° more easterly than the meridian of St. Paul; then edge to the E. N. Eastward, into the S. E. trade, and pass the N. W. Cape of New Holland either in sight, or at any distance thought requisite.

Route to China during the S. W. monsoon, in times of war.

If it is the season when the S. E. monsoon prevails to the southward of the equator, and the S. W. monsoon to the northward of it, they ought not to enter the Pacific Ocean, but pass through Allass, or more preferable Sapy Strait, from March to September; and by the Strait of Macassar, then through the Sooloo Sea, up the west coasts of Mindanao, Panay, Mindora, and Luconia. If any danger from an enemy is apprehended on these coasts, they may, if the season is not far gone, pass to the westward of Sooloo, and enter the China Sea by Balabac Strait, then run along the west coast of Palawan, and keep at any desirable distance from the Coast of Luconia.

N. W. Cape of New Holland, and geo. site.

THE NORTH-WEST CAPE OF NEW HOLLAND, by mean of six ships chronometers, and lunar observations taken December 10th, 1800, is in lon. 114° 30′ E. Captain Torin, of the Coutts, made it by chronometers at the same time, bearing S. in 114° 26′ E. October 4th, 1797, he made it by chronometers in 114° 26′ E. and by lunar observations in 114° 28′ E.; the longitude of this Cape may, therefore, be assumed at 114° 28′ E., which is certainly near the truth. The same navigator, by noon observation, made it in lat. 21° 50′ 30″ S. and observes, that it has a resemblance to the Bill of Portland, being lower than the land to the southward, which takes a direction from the Cape about S. W. ½ S. This part of the coast seems barren, has a sameness of appearance, and is about the height of the Lizard; it may be seen at 7 or 8 leagues distance. A good mark for coasting along near the N. W. Cape, is to keep the southern extremity of the land about south. To the eastward of the Cape, the land turns sharp round to the southward, by which a deep bay is formed, having several low sandy islands in it, some of which lie about 9 leagues from the Cape to the E. N. Eastward; one of them is Rosemary Island, already described by a note, in lat. about 20° 22′ S.

Directions for making the coast.

All ships intending to see the coast of New Holland, should make it to the southward, between Shark's Bay and the N. W. Cape, where there are soundings several leagues from the shore in most places, and it may in general, be approached within 2 or 3 leagues with safety. Several ships have made it to the N. Eastward of the Cape; but no ships should make the land there, for the islands are low, with breakers projecting from some of them, and the reef bearing about N. W. 3 leagues from Rosemary Island, must be very dangerous to approach in the night.

If the longitude be not certain, and approaching any part of this coast in the night, the navigator should run toward it under easy sail, heaving the lead every hour, or every half-hour if the velocity of the ship is great, by which means, soundings will be obtained before he get too near the shore.

The indications set forth in the Directory, not always discernible.

The Old Directory, mentions the never-failing guides in approaching this coast, to be great quantities of skuttle-bones, weeds, and drifts; also grampusses, with an amazing number of tropic birds. These guides are not always observed, as Captain Torin remarks, on making the coast, December 9th, 1800. He saw a flock of birds the day before, and states, that this is noticed, because it was the third time he had steered in for the coast, and never saw any of the birds, skuttle-fish-bones, weed, &c. mentioned in the Directory. Sometimes snakes may be seen on the surface of the water, when in soundings, and birds with brown wings and white bellies, resembling the lapwing in their flight, but the lead and a good look out, are the best guides in approaching this coast, particularly if the longitude be uncertain.

The variation off the N. W. Cape of New Holland was 4° westerly in 1797, and 3° 40′ W. in 1801. The extremity of the Cape (which is a bluff point) may be seen from the deck of a large ship about 6 or 6½ leagues distance. Close behind it, and among the islands to the eastward, there is thought to be good anchorage.

Currents between the Island St. Paul and the coast of New Holland.

When Captain Torin made the coast of New Holland, 3d October, 1797, in the Coutts, he had, during the run from St. Paul, experienced a current of about 30 miles to the westward. When he made the coast, in the Pigot, November 7th, 1780, had an easterly current of 1° during the run from the island to the coast; and an easterly set of 3° 22′ from the one to the other, when he made the coast, December 9th, 1800, by which it appears that the current runs strong to the eastward as the season advances.

From the N. W. Cape the fleet steered N. E. by N. 71 miles, N. E. 12 miles, had then 55 fathoms, fine sand; steered N. E. 7 miles, then 55 fathoms, and the same course 6 miles to noon, lat. observed 20° 05′ S. lon. 115° 34′ E. by chronometers, in 47 fathoms, the wind at W. December 10th.

Passage from N. W. part of New Holland, by Sapy, Salayer, and Dampier's Straits, to China.

December 11th, steered N. 8 miles, in 48 to 44 fathoms; N. E. by N. 8 miles, 43 fathoms, and 4½ miles more on the same course; had then 23 and 28 fathoms; soon after no ground at 60 fathoms, continuing the same course till noon; lat. observed 18° 54′ S. lon. by lunar observations 116° 30′ E. From hence, had faint westerly and S. W. winds two days, then variable light breezes from N. E. to S. E. till Sandalwood Island was seen on the 19th. They entered Sapy Strait 23d, watered there, passed by Salayer Straits, and through Dampier's Strait, and arrived the 17th February, 1801, at Macao.

By Ombay, and the Gilolo passage to China.

December 7th, 1801, with a southerly wind, at 10 P. M. in the Elizabeth, the coast of New Holland, in lat. 22° S. was seen bearing east, distant 4 or 5 miles; they hauled off N. W., sounded, and had 55 fathoms; passed on the east side of Sandalwood Island the 17th, with westerly winds; on the 21st, passed the east end of Ombay; on the 25th, between Bouro and Xulla Bessey; on the 28th, between Gagy and Geby; and to the westward of Yowl Islands the 30th. Here, the current set strong to the eastward; among the islands it set to the southward. This ship arrived in Canton River, January 18th, 1802, by the Bashee passage.

By Allass, and Bally Straits, and through Macassar Strait, to China.

September 23d, 1798, the Dublin, and fleet, made the coast of New Holland in lat. 21° S. and had southerly winds till in lat. 15° S. on the 25th; from hence easterly winds prevailed till the 28th, when they found themselves off Banditti Island. With the easterly wind, part of the fleet worked along the south side of Lombock, and arrived at Bally Town, in Allass Strait, October 4th; sailed from this Strait the 10th, with the wind S. E.; reached Pulo Laut the 14th, and passed Cape Donda on the 19th. The other part of the fleet went through Bally Strait, watered there, sailed October 4th, passed between Pondy and Madura, cleared Cape Donda the 16th, and arrived at Macao the 15th November, by the Bashee passage.

By Sapy and Macassar Straits to China.

September 20th, 1798, at 10 P. M. they saw the coast of New Holland in the Caledonian, in lat. about 22° S. bearing E. ½ N. distant 3 leagues; sounded, and had 42 fathoms. The journal says, "The land here, by the charts, is in lon. 110° 30′ E.; by our lunar observations, it is upwards of 3½° more to the eastward. They had easterly winds both to the northward and southward of Sapy Strait, passed through it the 28th, and were obliged to make a tack in passing to the eastward of the Postillions, at 4 leagues distance, 30th September. On the following day, they went over a coral bank of 13 fathoms in running for Macassar Strait; October 13th, cleared Cape Rivers; November 2d, saw Formosa, and arrived the 4th at Macao.

By Ombay and Dampier's Strait to China.

January 13th, 1796, the Belvedere left the coast of New Holland in lat. 21° S., having made a low island the day before; after leaving the coast, calms and faint westerly and N. W. winds continued 2 days, then light and variable winds from southward till the 24th, at making the west end of Sandalwood Island. With light westerly winds, and land and

sea breezes, she passed along the north coast of this island, sometimes within 3 miles of the shore, and had strong ripplings. The boat was sent to range along it in search of the watering place, but it could not be discovered. On the 5th February, she passed the east end of Ombay, and round the west end of Bouro 10th; cleared Dampier's Strait 20th; saw Bottel Tobago Xima March 17th, was delayed here 4 days by westerly winds: it then came at N. E. and S. E. which carried her to Macao on the 25th.

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# *ISLANDS to the South and S. Eastward of JAVA, adjacent STRAITS, and SOUTH COAST.*

## DIRECTIONS TO SAIL FROM ST. PAUL, TO THE STRAIT OF SUNDA.

Cocos Islands.

COCOS ISLANDS, are low, and covered principally with the cocoa-tree; they are not seen above 5 leagues from the deck of a large ship; some navigators who have landed on them, found no article of utility, except cocoa-nuts, and their extent is not more than 10 or 11 leagues. The northernmost is a single low island, 5 or 6 miles long, and 3 or 4 miles broad, with breakers projecting from it in several places, having apparently safe landing on the west side. The channel betwixt this and the southern islands is about 3 or 4 leagues wide, through which the General Coote passed. Captain Robertson (then an officer in that ship) describes the southernmost to be a circular group of low islands, extending from lat. 12° 04′ S. to 12° 23′ S., the eastern extremity being 7° 50′ W. from Java Head, and the western extreme is on the meridian of the northernmost island, which he places 8° 01′ W. of Java Head, and in lat. 11° 50′ S., bearing due north from the westernmost of the group 14 miles. In ranging along the north part of the group, no danger was seen detached from the shore, which seemed steep to, with a beautiful beach of sand, or probably white coral. A reef projects near a ¼ of a mile from the N. W. part of the group. The Houghton, in 1788, passed along the east side of the southern group; a fine sandy* beach appeared on the easternmost island. In the centre of the group, there is an extensive bason of smooth water, which is probably a safe harbour for small vessels, although these islands are generally supposed to be steep to, and without anchorage.

The southern limit of this group 12° 23′ S., as placed by Captain Robertson, is no doubt nearly correct, although the observations of some other persons make it several miles more northerly. Observations taken in 6 different ships by chronometers, and moon, make the North Coco in lat 11° 49¾′ S. lon. 97° 04′ E.

Geo. site.

Christmas Island.

CHRISTMAS ISLAND, is about 3 leagues in length each way, being of square form, and may be seen 12 leagues off in clear weather; it abounds with trees, many of which are said to be coccoa-nut and limes.

Captain G. Richardson, in the Pigot, endeavoured to find anchorage at Christmas Island in 1771; two boats were sent to examine it, but they could find no place where a ship might anchor, during a search of 2 days, sounding round the island. All round, it was found steep to, with 95 fathoms, within a cable's length of the shore; and the only accessible part they discovered, was at the north-west part of the island, at a small white beach, resembling sand, but formed of white stones and coral, where they landed, and got a number of land-crabs and boobies. Some wild hogs were seen, but they could find no runs of water.

* Perhaps white coral.

Ship Earl Wycombe, made the body of the island in lat. 10° 34′ S. lon. 105° 33′ E. by good observations. Lieutenant Davidson, in the brig Waller, made the body in lat. 10° 32′ S. lon. 105° 33′ E. by ☉ ☾. Captain L. Wilson, a very correct observer, made the north end in lat. 10° 27′ S. and the body in lon. 105° 33′ E. or 19¼ miles E. from Java Head by chronometer, to the west end of the island. Lascelles by chronometer, made it also in lon. 105° 33′ E. Geo. site.

These observations nearly correspond with each other, and with those made in the Asia, by Mr. William Stone, in July, 1805. This ship, in proceeding from China to Bombay, by the eastern passage, sailed close to Christmas Island; observations by ☉ ☾ agreed nearly with the chronometers, one of which was excellent. Sights taken with the island S. made its centre in lon. 105° 34′ E. The whole of the observations for latitude and longitude taken in the Asia, make Christmas Island extend from lat. 10° 27′ S. to 10° 35′ S., and from lon. 105° 29′ E. to 105° 39′ E., which position is corroborated by the observations of other ships since that time.

TO SAIL FROM THE ISLAND ST. PAUL toward the Straits east of Java, directions have been given; some additional remarks may be requisite, to convey a knowledge of the situation and appearance of the head-lands contiguous to the southern parts of these straits.

If a ship be in the vicinity of the N. W. part of New Holland, and it is intended to enter the Pacific Ocean by the shortest route, which is to proceed through the Ombay, and Pitt's Passage, she ought to make the east part of Sandalwood Island, and pass between it and Savu; or between the latter and Rotto, should she fall to leeward with N. W. or westerly winds. Ships generally make the west part of Sandalwood Island, and pass to the northward, between it and Flores; but the route to the eastward of it is more direct, and should be preferred, particularly with variable winds, and it can never be requisite to pass to the westward of Sandalwood Island, unless the wind blow strong from N. Westward, with a lee-current; in such case, the cautious navigator may be desirous of passing to windward of it. To sail toward Sandalwood Island, and the Ombay passage.

SANDALWOOD ISLAND, called Jeendana by the natives, being the Malay name for sandal, is of middling height. Near the west part of the island there is a peak, which can be seen about 20 leagues distance, and in most parts, the south coast may be discernible at the distance of 9 or 10 leagues. It extends about W. by N. and E. by S.; the N. W. end, called Bluff or Breaker's Point, (on account of some breakers projecting from it) is in lon. 119° 00′ E. or 5 miles west of the meridian of Gunong-apee Peak, and the east end of the island in lon. 120° 40′ E. by mean of several ships observations. The N. W. or northern extremity is in lat. about 9° 15′ S.; Bluff, or West Point, in about 9° 42′ S.; and the southern extreme, in about 10° 22′ S. Near Bluff Point, there are soundings from 30 to 60 fathoms, at the distance of 3 or 4 miles from the shore: when this point and the S. W. end of the island were in one bearing, S. 39° E., the extremity of the breakers then bore S. 32° E. and the peak S. 75° E. The west end of Sandalwood Island bears about S. S. W. from the entrance of Sapy Strait, and the S. E. end of Sumbawa. Sandalwood Island. Geo. site. &c.

Between Sandalwood Island and SAVU, the channel is wide and safe, the body of the latter being in lat. 10° 37′ S. lon. 122° 00′ E. by lunars, agreeing with chronometers in a run of 6 days from Amboina, by Captain Heywood's observations, or 6° 15′ W. from Amboina flag-staff. Savu may be seen 7 or 8 leagues from a ship's deck. BANJOAN lies near its S. W. end; NEW ISLAND, 13 or 14 leagues to the westward, in lat. 10° 40′ S. lon. 121° 03′ E.; they are both low, and covered with trees. Geo. site of Savu Island. Banjoan and New Island, geo. site.

STRAITS OF ALUER, PANTAR, SOLOR, AND FLORES, situated between Ombay and the Islands Flores or Mangerye, are not much frequented by English ships: if The straits between Ombay and Sapy Strait not much frequented.

the Ombay passage be not preferred, they generally proceed through some of the straits to the westward of Flores, as those to the eastward are narrow, with strong tides in them.

SAPY STRAIT, is much used, but ships which intend to pass through Salayer Straits in the westerly monsoon should not choose it, for they may find great difficulty in weathering Salayer, if the W. N. W. winds blow strong with a lee current. This frequently happens during the strength of the westerly monsoon, which makes Allass Strait preferable in this season, it being farther to windward.

Directions to steer toward Sapy Strait.

Ships steering for Sapy Strait, with light variable or easterly winds, may fall in with the west end of Sandalwood Island; but with westerly winds, which blow strong, with a lee current, the south coast of Sumbawa should be made. This coast extends nearly in the parallel of 9° S. latitude, upward of 50 leagues, and is mostly high land, except near the middle of it, there is a low point covered with trees, opposite to the bottom of the great bay, which enters into the north side of the island, and nearly cuts it in two.

South coast of Sumbawa,

and of the entrance of Sapy Strait.

Sapy Strait, at the entrance from the southward, is about 4 leagues wide; it is formed on the east side by the Island Comodo, which is high land, and to the westward by the S. E. end of Sumbawa, and the islands contiguous. The south-east end of Sumbawa, by recent observations, is in lat. about 8° 42′ S. and lon. 119° 14′ E., having rugged islands at a considerable distance to the westward, and the Camara Islands on the east side, several of which are small islets.

From the entrance of Sapy Strait, in clear weather, the peak on Sandalwood Island is visible, bearing S. 2° W. Wood and water may be always procured at Sapy, or in the bays near it.

Geo. site of the south entrance of Allass Strait.

ALLASS STRAIT, is safe, and much frequented. It may be easily known in coming from the southward, the S. W. end of Sumbawa, which bounds it to the eastward, being high rugged land; whereas, the S. E. end of Lombock, forming the W. side of the entrance of this Strait, is composed of steep cliffs facing the sea; the land here, appearing low and level, at 5 or 6 leagues distance. The S. W. end of Sumbawa is in lat. about 9° 02′ S. and lon. 116° 42′ E., from observations I made in 1796, by ☉ ☾ ✱ and chronometers, to construct a plan of the Strait of Allass, which agree exactly with those of the Boddam and Asia, by ☉ ☾ and chronometers. The S. W. end of Sumbawa extends about 3½ or 4 leagues more south than the S. E. end of Lombock; and the breadth of the channel from this point to the Sumbawa shore is about 3 leagues. A ship should borrow towards Lombock, there being soundings near the S. E. point, and along the shore of this Island throughout the Strait; but the Sumbawa shore is steep to. Near the pitch of Lombock Point, there is a rock high above water, distant about ½ a mile from the shore; and several rocky islets lie near the steep cliffs to the westward of the point, outside the entrance of the Strait. At Bally Town, and at Segar, (both on the Lombock side of the Strait,) water and other necessaries are procured.

How to approach it.

LOMBOCK STRAIT, formed by the Island Bally to the west, and that of Lombock to the east, is about 13 leagues W. N. Westward from the S. E. point of the latter Island.

South coast of Lombock, entrance into Lombock Strait.

Between the Straits of Lombock and Allass, the south coast of Lombock is indented by several bays or inlets, one of which lies a few leagues eastward of the S. W. point of the Island, having some rocks near its west point, 2 or 3 miles from the shore. The south entrance of Lombock Strait is easily known, the large Island Banditti lying nearly in the middle of it, which has a level contour resembling a table, with a small nob or peak on the east end, when seen from southward, and the cliffs facing the sea, are steep like the forelands.

The channel into the Strait, is to the eastward of this island; a group of rocky islets extend from it to Bally on the west side. The Cirencester was during a calm, horsed between Banditti Island and those close to the west side of it, by a rapid current or tide. This happened in the night. The channel seemed so narrow, that they thought the ship would touch against the steep shores on either side, which appeared over the tops of the masts, although no soundings could be obtained. She was carried through this critical gut by the strong currents or tide, fortunately without damage. Ships should, however, avoid the west end of Banditti Island, and not approach the Islands near it, particularly with baffling winds. Rapid Tides.

In clear weather, Lombock Strait may be easily distinguished from the others, when the Peaks of Bally and Lombock are visible, at 7 or 8 leagues distance from the entrance. Bally Peak, situated at the east end of the Island of this name, is a sharp pointed mountain, and is in the centre of the opening of the Strait bearing N. by W.; same time, Lombock Peak bearing N. E. ½ N. (appearing double in this view) is seen topping over the western high land of the Island. This peak is situated near the north end of Lombock, and bears N. N. W. from the entrance of Allass Strait. It may be seen near 30 leagues distance in clear weather. Marks to know this Strait.

In entering Lombock Strait, a ship should keep mid-channel between Banditti Island and Lombock, and afterward nearest the eastern shore; this will prevent her from being set toward the north shore of Banditti Island, should the winds be light, and the tide of ebb make to the southward after she has entered the Strait. How to enter it.

The tides are rapid with strong eddies, and no bottom to be had in the fair channel in passing through. From the best accounts, Banditti Island is in lat. 8° 46′ S. and in lon. about 115° 15′ E. Geo. site of Island Banditti.

BALLY STRAIT, situated between the Island of this name, and the east end of Java, is 5 or 6 leagues wide at the entrance from the southward, and 14 or 15 leagues to the westward of Lombock Strait. Table Point, and the other land of Bally on the east side of the Strait, is higher than the east end of Java, which is an even piece of land resembling Banditti Island, sloping down at each end, when viewed from the southward at 6 or 7 leagues distance. The S. E. point of Java is in lat. 8° 46′ S. and in lon. 114° 33′ E., by mean of several ships observations, of moon and chronometers. South entrance of Bally Strait, how to know it. Geo. site of Java, S. E. point, on the west side of the entrance.

From February to September, southerly winds generally prevail near the south coasts of the islands, which form the Straits now mentioned; a ship should then, at leaving the S. E. trade, be nearly on the meridian of the strait through which she is to pass, and steer north for it. After losing the S. E. trade, the winds may often be found variable, but generally between S. S. W. and S. E. near the Islands. How to approach the Straits eastward of Java, in the easterly monsoon.

If on drawing near them, the wind incline far to the eastward, she must keep a little to windward of the entrance of the intended Strait, for the current will probably set to the westward.

From November to March, strong westerly winds are frequently to be expected, which produce an easterly current, setting along the south coast of Java, and the islands to the eastward. She ought, therefore, in this season, to keep a little to the westward of the entrance of the strait intended to be used, particularly, if the wind incline to draw to the westward as she approaches the land. And in the westerly monsoon.

THE SOUTH COAST OF JAVA, extends from the entrance of Bally Strait, nearly W. by N. to Wine Cooper's Point, excepting in several places, where bays or inlets cause a deviation from this general direction. On most parts of this coast, there are soundings near the shore, and anchorage in several bays, over a bottom generally black sand; but they are seldom visited by strangers. South coast of Java.

Vleer Muys Bay. VLEER MUYS, (Flying Mouse) Bay, situated about 8 or 9 leagues eastward of Noesa Baron, seems to afford no shelter, the shores being rocky, the water too deep for good anchorage, and the Bay much exposed, with some islands in it.

Geo. site of Noesa Baron. NOESA BARON, in lat. 8° 38′ S. lon. 113° 35′ E. distant from the coast 5 or 6 leagues, is an island about 7 or 8 miles in extent east and west, of a low and level appearance, presenting a front of bold cliffs on the south side, with a high surf beating against them; all the other isles or rocks on this coast, lie much nearer the shore. About 7 leagues to the eastward of Noesa Baron, far inland, Moneroo high Peaked Mountain is situated, which may be seen when coasting along in clear weather.

Tangala Isles. TANGALA ISLES, are small, 3 in number, situated near each other, and appear joined together when viewed from the westward; but separated, when seen from the southward: the central or largest isle, is in lat. 8° 26′ S. lon. 112° 26′ E. by chronometers, and is on with a remarkable hill bearing N. ½ E. To the westward of Tangala Isles, there are two remarkable hills near the sea.

Geo. site.

Patietan Bay. PATIETAN, OR PATEJETAN BAY, called also INLAND BAY, in lon. 111° 06′ E., *is said* to afford shelter from all winds, in depths of 9 to 13 fathoms black sandy bottom, although there is generally a heavy surf beating against the shore at the bottom of the bay. The course into this bay is about north, having 40, 30, to 25 fathoms in the entrance, which is 1 or 1½ mile wide, opening inside into a circular basin or bay.

Turtle Bay. TURTLE BAY, in lat. 7° 48′ S. separated from Maurice Bay by the island Cannibaz, distant about 7 leagues from the latter Bay, seems to be well sheltered from westerly winds by the island mentioned, where ships may lie in from 7, to 8, or 9 fathoms in fine black sand; and the eastern side of this Bay affords shelter from easterly winds.

Pananjung Bay; PANANJUNG BAY, called Maurice Bay by the Dutch, in lon. about 108° 30′ E. is formed by a peninsula on the west side, and on the east side by the island Cannibaz, which island, extends 6 leagues from W. N. W. to E. S. E., separated from the main by a narrow inlet, which communicates with a large inland lagoon, little known to navigators. The Bay of Pananjung affords good shelter in the westerly monsoon, also fresh water easily obtained, and other refreshments may be got, as appears by the journal of the Company's ship Anna, bound to Bencoolen, which ship anchored here in 7 fathoms black sand, on the 24th of Dec. 1703, and moored with the extremes of the land from E. S. E. to S. S. E. ½ E., the latter being the S. W. point of the Bay. She struck her topmasts, examined her rigging, wooded and watered, obtained rice, some buffalos, fruits and vegetables in this bay, and sailed from hence on the 10th of Jan. 1704, for Bencoolen.

affords shelter and refreshments.

When entering Pananjung Bay, a rock perforated like the arch of a bridge will be discerned, also 3 rocks in a line like 3 sugar-loafs; there is no danger, the soundings decreasing gradually till within a mile of the shore, where a ship may anchor, or nearer if requisite. Fresh water is easily got in a small sandy bay.

Tiulan Bay, Geo. site. TULAN, TIULAN, or CHIDGULAN BAY, called Dirck Vries Bay by the Dutch, appears to be situated in lat. about 7° 50′ S. long. 108° 12′ E., separated from the Bay last described, by a peninsula projecting into the sea. This Bay, also affords shelter from the westerly monsoon, where refreshments may be got, but not fresh water, without great difficulty.

Refreshments got, but not water.

The Anna, anchored here in 11 fathoms fine black sand, on the 11th of December, 1703, with the western extreme of the land bearing S. ½ W., the eastern extreme E. by N., and

Cheribon Hill N. E. by E. ¼ E., appearing like a sugar loaf, high over the other land. Here she remained till the 24th, and finding the natives friendly, got timber for spars and fuel, plenty of rice, fowls, vegetables, some buffalo beef, and abundance of fish may be caught in the sandy bays, but she was obliged to proceed for Parianjung Bay to fill up her water.

The Anna made Tulan Bay about 2° 50′ East of Java Head by computation, and remarks, that 2 large rocks lie 16 leagues to the west of it, with 6 other rocks interspersed between these and the Bay.

The land on the south coast of Java is not easily known, the alternate high and low lands having a similar appearance in coasting along. From the west part of Direk Vries Bay, the shore lies about W. by N. to Wine Cooper's, or Wine-Row Point; it then takes a direction northward, and N. Eastward, to the parallel of 7° S., by which an extensive concavity is formed, called Wine Cooper's Bay. From the bottom of this Bay, the direction of the coast is nearly W. ½ N., about 28 leagues to Java Head.

Geo. site of Wine Cooper's Point.

WINE COOPER'S POINT, in lat. 7° 28′ S. lon. 106° 36′ E., is environed by rocks and breakers, having a small low sandy islet near it, on which several trees appear. In coming from the eastward, this point is easily distinguished, the double land having a declivity towards it, and the point itself low, covered with trees, and terminates the coast in this part to the westward.

Claps and Trowers Island.

From Wine Cooper's Point to Claps Island, the course is W. N. W. about 20 leagues. This Island is situated about 3½ leagues from the shore of Java, and about the same distance W. by S. from Trowers Island, which lies about 2 leagues off shore. Between these Islands, and to the northward of them, there is anchorage; they are low and covered with trees.

Appearance of the land about Java Head.

CLAPS ISLAND, is called also Breakers Island: to the northward of it and Trowers Island, the land of Java is low; a little farther eastward it is high, with steep cliffs facing the sea; the land over Java Head is also high. Ships running in for the land to the eastward of Java Head, have often mistaken the high land first mentioned, for that over the west end of Java; and the space of low land between them, for the entrance of the Strait; as this is not discerned, till a ship is well in with the coast. The high land over Java Head and that to the eastward, are similar in appearance, the west end of each, having a sharper declivity than their eastern extremities.

From Clap's Island, it is about 7 leagues N. W. by W. to Java Head, which is a bluff promontory, at the foot of the high land that forms the west end of Java. Near the shore, to the southward of Java Head, there is a reef on which the sea breaks; and several rocks near a mile off, may be perceived in coasting along from the southward.

Geo. site of it, and Wine Cooper's Point.

JAVA HEAD, is in lat. 6° 48′ S. and in lon. 105° 11′ E. by mean of many chronometers and lunar observations taken in different ships, or 1° 41′ W. from Batavia City, measured by good chronometers. The variation near Java Head, in 1790, was 1½° Easterly.

To sail from St. Paul toward Sunda Strait.

FROM THE ISLAND ST. PAUL, ships bound to Sunda Strait or Bencoolen, may run several degrees farther to the eastward, before they edge away to get into the S. E. trade; they may afterward, keep away gradually to the N. Eastward, and cross the tropic of Capricorn in about lon. 102° E. From March to September, they should get on the meridian of Java Head, when several degrees from it, and steer north: the S. E. trade sometimes prevailing easterly, in March, April, and May, and a current setting to the westward along the south coast of Java, during the easterly monsoon, from March to September, render it indispensible to keep to the eastward, and not fall to leeward of Java Head in this season, particularly those ships bound into Sunda Strait; they should, therefore, endeavour

In the easterly monsoon.

to make Claps Island, situated 7 or 8 leagues S. Eastward from Java Head, or make the Head itself; if certain of the longitude by observation, or by good chronometers.

The westerly monsoon.

From September to March, an opposite proceeding should be adopted, when N. W. and Westerly winds frequently prevail between the northern limit of the S. E. trade and the equator. This is called the Westerly or N. W. monsoon, and prevails from October to March. In December and January, the westerly and N. W. winds are generally strong, extending to 1° or 2° N. lat. and to 12° or 14° S. lat. These winds force a lee current before them to the eastward, which runs strong along the south coast of Java; the weather being then mostly dark and cloudy, with much rain. Several ships, which in this season, have fallen in with the land to the eastward of Java Head, found it impossible to beat round against the westerly winds; and strong currents setting to the eastward; they were obliged to steer southward, re-entering the S. E. trade, where they made westing sufficient to pass to the westward of Java Head.

To sail toward Sunda Strait in this monsoon.

In the season when westerly winds prevail, a ship bound to Sunda Strait ought not to proceed to the northward on the meridian of Java Head, but should steer direct for the S. W. end of Sumatra, or the Island Engano, taking care to pass Java Head well to the westward, as the winds are often variable between W. and N. N. W., near Engano and the entrance of Sunda Strait. When she has got nearly on the parallel of Java Head, and is 1 or 2 degrees to the westward of it, a direct course may be steered for the strait, with an allowance for a probable current setting to the southward. Although these instructions may be followed from September to March, they ought certainly to be adopted in November, December, January, and part of February, when the westerly monsoon may in general be expected.

and to Bencoolen.

In this season, a ship bound to Bencoolen should steer to the northward after losing the S. E trade, keeping nearly on the meridian of Achen Head till she is well to the northward of the Cocos Islands, or approaching the latitude of Java Head; she will then probably meet with N. Westerly winds, with which a course may be followed to fall in with Trieste (or Reefs) Island; or she may pass this island to the northward, between it and the Island Larg, should the wind prevail from northward; but should it incline from S. W. or Southward as she approaches the former island, a direct course to the southward of it, may be pursued for Bencoolen.

Instances of great delay by falling to leeward in the westerly monsoon.

One of the ships from London, bound to Bengal for rice, fell in with the Island Engano in January, 1796. From hence, with N. Westerly winds and a current setting to the S. E., she was carried to the southward of Java Head, and obliged to stand to the southward with the westerly winds, till in lat. 10° S. they became variable, which enabled her to make westing. This mistake occasioned the loss of several men by scurvy, as they were short of provision, &c., and no supply obtained, till after this protracted passage, she reached Bengal.

Another instance may be adduced, to shew the care requisite in running for the Strait, and not to make the land to the eastward of Java Head in the N. W. monsoon.

Captain G. Richardson of the Pigot, fell in with the land 5 degrees to the eastward of Java Head, in December, 1771; this proceeded from the instructions advising the land to be made to the eastward of the Head, without noticing the seasons. He was obliged to stand to the southward into the S. E. trade, finding it impossible to get to the westward otherwise, the westerly winds being constant, with a current setting to the eastward along the south coast of Java. Having made sufficient westing in the trade to weather Java Head, he entered Sunda Strait, 6 weeks after falling in with the south coast of Java.

The Anna, bound to Bencoolen, made Java Head bearing N. N. W. ½ W. on the 5th December, 1703, having strong westerly winds and lee currents, she could not beat round it, and was forced to bear away on the 9th, in search of water and refreshments, in some of the bays on the south coast of Java; and she got all these with facility in Maurice Bay, as may be seen in the description of the south coast of Java.

# *DIRECTIONS for the OUTER PASSAGE, to Places on either side the BAY of BENGAL;*

## AND THE PREVAILING WINDS IN THE INDIAN SEAS.

NAVIGATORS have the choice of proceeding by the Mosambique channel, or any of the routes east of Madagascar, when they expect to cross the equator during the season that the S. Westerly monsoon is prevailing to the northward of it, which is from March to October. The outer passage, to the eastward of the Chagos Archipelago, may also be adopted in this season, or at any time of the year, but ought certainly to be followed by all ships from Europe, or the Cape of Good Hope, which are to cross the equator from September to April, when N. Easterly winds mostly prevail in north latitude. Different routes towards India.

Between the Island Madagascar and New Holland, the trade wind generally prevails from S. E. in lat. from 26° to 12° S. In February, March, April and May, the southern limit of this trade is frequently extended to 28° or 30° S. lat.; and in these months, the wind is often fixed at E. or E. N. E., continuing from these directions, many days together; this happens more particularly in the ocean, for near the west coast of New Holland, the trade wind blows from southward and S. W.; and eastward of Madagascar, near the Islands Mauritius and Bourbon, the trade wind is often obstructed by sudden changes. Winds in the Indian Seas. S.E. Trade.

From the equator to the 12th degree of south latitude, the winds prevail from E. and E. S. E. during 6 months. This is called the easterly monsoon, and continues from April to November. From October to April the westerly winds prevail within the same limits, blowing often at N. W. and N. N. W., with cloudy weather and rain. This is called the westerly monsoon, which brings the rainy season; the easterly monsoon being the dry season to the southward of the equator. Easterly monsoon, in S. latitude. Westerly monsoon.

The westerly winds are strongest in December and January, but are never so constant as the easterly winds in the opposite monsoon, which frequently extend to the equator, in June, July, and August, from the meridian of Madagascar to 90° E. longitude; but in proportion as the distance from Sumatra is decreased, the northern limit of the easterly monsoon recedes to the southward, leaving a space of variable winds between it and the equator. not so constant as the former.

When the S. E. or Easterly monsoon is prevailing to the southward of the equator, on the north side of it the S. W. monsoon predominates, which is the rainy season in north latitude on most of the coasts of India. It commences in April, at the north part of the Arabian Sea, Bay of Bengal, and China Sea; but seldom till May near the equator, which is its southern limit; from thence, it blows home to all the coasts of India, Arabia, and China, continuing till October. This is a changeable month, liable to gales of wind on the Malabar Coast, and in the Bay of Bengal. S. W. monsoon in N. latitude.

In October, or early in November, when the N. W. or Westerly monsoon begins to the southward of the equator, the N. E. monsoon commences in the Arabian Sea, Bay of Bengal, and China Sea, which continues till April. This is the fair weather monsoon in the Arabian Sea, and in the Bay of Bengal, the winds being more moderate and settled than in the S. W. monsoon. The equator is the southern boundary of the N. E. monsoon, or general limit between it and the N. W. winds prevailing in south latitude; but there is often a considerable space between them, subject to light variable breezes and calms. N. E. monsoon.

It may be observed, that the N. E. monsoon should commence in October; but this is seldom the case in the southern part of Bengal Bay, for between Ceylon and the entrance of Malacca Strait, from the equator to 8° or 10° N. lat. westerly winds are frequently experienced in October and November, which blow strong and constant several days at a

Westerly winds often happen in October and November, from Ceylon to Achen Head.

time: near the equator, these winds are mostly at N. W. and N. N. W. In a direct line from the Island Ceylon to Achen Head, they are from W. S. W. to W. N. W.; and more northward into the Bay, from S. W. and S. S. Westward.

In October and November, these westerly winds prevail much about the Nicobars, and the entrance of Malacca Strait, and from hence to Ceylon, so that it appears very detrimental for ships bound to that Island, or to the Coromandel Coast, to fall in with Achen Head in these months; nor is this requisite during any period of the N. E. monsoon, for it must frequently lengthen the passage.

Not advisable then to make the N. W. end of Sumatra.

It is generally very tedious passing from the west coast of Sumatra or Sunda Strait to Ceylon, in October and November, on account of the N. Westerly and variable light winds.

How to proceed into the S. E. trade, and from thence to the Bay of Bengal.

Ships bound to the Bay of Bengal, when they are entering the southern limit of the S. E. trade, or in lat. about 26° to 28° S., should be in lon. about 80° to 85° E., if they expect to pass the equator from March to October, whilst the S. W. monsoon prevails to the northward of it. In standing across the trade, it often happens that no easting can be made, the wind blowing more from E. and E. N. E. than from S. Eastward; this has been experienced in different seasons of the year, but more particularly in March, April, and May. Between the meridians of Cape Comorin and Madagascar, in the western part of the Indian Ocean, the trade wind is most liable to hang far eastward; for near Java, and the west coast of New Holland, it is found mostly at S. E. and Southward.

As the S. E. trade may be liable to veer to the eastward, and continue so, ships ought not to enter it far to the westward, with the view of running down much longitude whilst crossing, in case of getting near the Maldiva Islands with a scant trade.* When they get into 1° or 2° N. lat. from April to October, they may be certain of the westerly monsoon to carry them to any part of the Bay. Ships bound to Ceylon or Madras in this season, should steer to the northward through the trade, keeping a little to the west of the meridian of Point de Galle, if bound there. If bound to Trincomale, they should make the land to the southward of it, from March to September, and to the southward of Madras from the 1st of February to September, when bound to that place.

Ships which expect to pass the equator between October and April, bound to the Bay of Bengal, may run to the northward in lon. about 90° E. through the trade; which will probably carry them to lat. from 12° to 8° S.; variable winds, mostly from W. and N. W. may be expected to follow, and continue from the northern limit of the trade, to the equator.

Ships bound to Bengal should not make the land of Achen.

With these winds, ships bound to Malacca Strait, should steer for Achen Head; but those proceeding for Bengal, should keep at a reasonable distance from Hog Island and the N. W. end of Sumatra; for here, they are subject to delay by light N. Westerly winds, and a current setting into Malacca Strait, particularly in October and November, when the N. W. and W. winds prevail much about the Nicobar Islands and Achen Head.

There is no just cause for passing to the eastward of the Nicobar and Andaman Islands, which was formerly thought the only secure route to Bengal, during the N. E. monsoon; but it is now well known, that light N. W. winds and Southerly currents prevail along the Aracan Coast in this season, which makes the passage along it to the northward, very tedious.

Should any navigator think the passage to the eastward of the Islands requisite, during the strength of the N. E. monsoon, he ought to pass to the westward, by the Preparis, or Cocos channel, and not approach the coast of Aracan.

But pass to the westward of the Islands.

After passing Achen Head at any discretional distance, from 1° to 2° or 3°, the west side of the Nicobar or Carnicobar Islands may be approached if the wind permit, by ships proceeding to Bengal during any part of the N. E. monsoon. Should the wind incline to keep

* This happened to the Contractor, as may be seen under the description of the southern part of the Maldiva Islands, and other ships have experienced the same.

at westward, the Islands need not be approached close; if at E. N. E. or N. E., they ought to steer up the Bay close on a wind, to the westward of the Islands. In 16° or 17° N. lat., the wind often veers more to the northward, favorable tacks may then be made to the eastward at times, to keep from the west side of the Bay; neither should the coast of Aracan be approached, but ships should work to the northward in the open sea, where there is smooth water and moderate breezes, which will enable them speedily to reach the Sea Reefs. It has frequently happened in the strength of the N. E. monsoon, that ships by passing close along the west side of the Nicobar Islands, have reached the Sea Reefs at the entrance of Hooghly River, without making a tack. Navigators from Malacca Strait bound to Bengal, who have great experience, never proceed along the eastern shore, but adopt the channels between the Andamans, or to the southward of the little Andaman, or even to the southward of the Nicobars, in time of war. They also proceed through the channels to the northward of the Great Andaman frequently, but always avoid the coast of Aracan.

To keep in the west side the Bay is proper in March.

Ships that cross the equator in March, should keep well to the westward in passing up the Bay, for the current then runs to the northward, along the Coromandel Coast, and the winds are often between S. W. and S. E.; whereas, in the middle of the Bay, they are variable and light from N. W. to N. E. in this month, with a drain of current at times setting to the southward.

To proceed to Madras in Oct. and Nov.

Ships bound to Madras in October, or early in November, ought not to proceed near Achen Head in hopes of benefitting by the N. E. monsoon, for they may be delayed by N. W. and Westerly winds. In the middle or western part of the Bay, in October, the winds will often be found variable from southward and westward; with which, a ship may speedily get to the northward.

and during the N. E. monsoon.

During any period of the N. E. monsoon, there seems no occasion for ships bound to Madras to exceed the lon. of 89° or 90° E.; and this is farther than necessary, for ships which sail well. Ships making the ports on the Coromandel Coast, should fall in with the land to the northward of the place to which they are bound, *after September;* for the current begins to set along shore to the southward in October, and is strongest in November and December; but this like the monsoons, commences in some seasons, near a month sooner than in others.

Winds near Ceylon, and to sail toward this Island.

At Point de Galle, and along the south side of Ceylon, and also in the Gulf of Manar, between that Island and Cape Comorin, westerly winds prevail nearly 8 months in the year. These winds commence in March, and continue till November, sometimes till the latter end of this month; ships, therefore, which pass the equator after the middle of March, and are bound to Ceylon by the outer passage, should steer north on the meridian of the place to which they are going, or rather keep a little to the west of that meridian, as westerly winds may be expected to the southward and westward of this Island, after the period mentioned, although not always constant. The same course of proceeding is advisable till November, and even in this month, strong westerly breezes may be generally expected; but in part of October and November, the current runs strong to the westward between Ceylon and the equator, which might render it unpleasant, were a ship to have no westerly winds in the vicinity of the Maldiva Islands.

Strong westerly currents in November near Ceylon.

In the Anna, we passed Point de Galle, November 24th, 1792, bound to China. On the 2d December, we were in lat. 3° N., and nearly on the meridian of Point de Galle, having experienced a constant current of 38 to 56 miles to the westward daily, by chronometers and lunar observations, from leaving Ceylon. During this time, we could gain no easting, the current being so strong, and the winds light and variable from northward. On the 2d December, the westerly current abated, and subsequently a drain set to the eastward.

It is, however, improper, for ships bound to Ceylon or the Malabar Coast, to cross the equator far eastward in November, for by doing so, their passage may be considerably delayed. The Woodford, and Albion, bound to Bombay, in 1799, after crossing the equator, stood into 88° E. lon. in the early part of November, expecting to get the N. E. monsoon;

Ships should not go far eastward in this month.

but they had constant westerly winds, and made the S. E. part of Ceylon in the middle of that month. A continuance of these winds, obliged them to beat round the Island, which occasioned great delay. Had they crossed the equator in lon. 80° or 81° E., steered then direct for Point de Galle, or more westerly from Cape Comorin after experiencing the wind constant from this quarter, their passage to Bombay would have been greatly accelerated.

The Belvedere, bound to Bombay, lost the S. E. trade, 19th October, 1793, in lat. 7° S. lon. 86° E., and had from hence N. W. and W. N. W. winds, to lat. 1° N. These N. W. and Westerly winds continued till the 30th, then in lat. 7½° N. lon. 85° E., at which time they veered to W. S. W. and S. W., enabling her to make the Friar's Hood, 5th November. She reached Point de Galle the 10th, where she was obliged to enter the Harbour, to renovate the health of her crew, and did not reach Bombay until the 5th of January, 1794. By losing the S. E. trade so soon, and crossing the equator so far to the eastward, her arrival at the port of destination was greatly prolonged.

The Travers, bound to Colombo, after crossing the equator with Southerly and S. W. winds, 22d October, 1802, in lon 82° 30′ E., had constant westerly winds; she worked against them, and arrived 2d November at Colombo; had she crossed the equator on the meridian of the west part of Ceylon, she most probably would have reached her port with the westerly winds without tacking.

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# *DIRECTIONS to sail from the CAPE of GOOD HOPE, to BOMBAY, the MALABAR COAST, or CEYLON,*

## ALSO FROM MAURITIUS TO CEYLON, BY THE MIDDLE PASSAGE.

Boscawen's Passage.

THE MIDDLE PASSAGE, now to be described, is that to the eastward of the Madagascar Archipelago; having this and the Mahe Islands to the westward, and the Chagos Archipelago to the eastward. It is called Boscawen's Passage by the French, after the English admiral of this name, who proceeded from the Island Mauritius to India by this passage, with a fleet of 26 sail, in 1748.*

This route ought probably to be preferred to any other, by ships destined for Bombay or the Malabar Coast, which do not pass the Cape *before the 1st of September;* for in such case, they ought not to proceed through the Mozambique Channel, but should adopt either the passage on the east side of Madagascar, or Boscawen's Passage. The latter of these, may be considered more advantageous than the other, the route by it, being more to the eastward; consequently, a ship proceeding by it, will be nearer to the coast to which she is destined, at the approaching N. E. monsoon.

When expedient to adopt.

If a ship pass the Cape of Good Hope between the 1st† of September and 1st of October, Boscawen's Passage seems the most convenient route, to proceed for the Malabar Coast, or to Bombay. A ship intending to adopt it, should enter the trade in lon. about 67° or 68° E., or get into this longitude when crossing the parallels of 26° or 27° S. in case the trade should hang far to the eastward, which frequently happens. This, however, is most common in March and April.

To proceed by this passage to Bombay or the Malabar Coast.

* It must be observed, that Admiral Boscawen steered directly north from Mauritius, and passed to the westward of the route now to be explained under this name.

† If they pass the Cape sooner, the route on the east side of Madagascar is preferable.

When she has got into the S. E. trade, a true north course is proper, keeping in lon. about 66° E., which will carry her well to the eastward of Cargados Garajos Bank, and the Bank Saya de Malha. The variation will decrease quick, in running to the northward.

Winds and Currents uncertain.

It is uncertain to say, how far a ship will carry the trade by this route in September or October, for in these months, the winds may be found very different in one year to what they are in another. The currents are also liable to the same changes, between the equator and the northern limit of the trade, in the same months.

Examples.

Bound to Bombay by the southern passage from Malacca Strait, in the King George, we crossed the equator in lon. 65° E., September 5th, 1791. On the 8th, in lat. 3° N. the wind shifted from S. to N. N. W. and N. W., and the current set N. Eastward till the 11th, then in lat. 5° N. lon. 66° E. From hence, the current set to the southward, from 6 to 20 miles daily; and mostly gentle breezes prevailed, constantly between N. and N. W. till we made Barsalore Peak and Pigeon Island, October 1st, having passed to the westward of the Laccadiva Islands. The wind sometimes veered to N. W. by W. and N. by E., but in general it was fixed between N. W. by N., and N. Next year, in the Anna from China, we lost the S. E. trade, August 22d, in lat. 1½° S. lon. 65° E. From hence, had light variable winds, and a current to the southward from 16 to 30 miles daily, till we crossed the equator 29th, in lon. 63° E.; had then a southerly wind 2 days, and lost the adverse current: in lat. 4° N. we got a steady S. W. monsoon on the 31st, with which we reached Bombay, the 9th of September. In the King George, the preceding season, we were only 7 days later in passing the equator, nearly in the same longitude, and found the S. W. monsoon completely vanished.

In the Anna, the voyage following from China, proceeding (improperly) by the same route, to the northward of the Chagos Archipelago, the S. E. trade failed September 7th, 1793, in lat. 4° S. lon. 75° E. The wind then veered to S. W. and W. S. W., and soon after to W. and W. by S. We kept tacking with these winds till the 11th, to endeavour to get to the westward, but finding this impossible, bore away to the eastward of the Maldiva Islands, and made the land near Anjenga on the 18th September, having experienced steady winds at west, till we made the land. On the Malabar Coast, the current set constantly southward, and the winds were unsettled at N. W. and Westward, which made it very tedious getting to the northward, and prevented us from reaching Bombay till the 21st of October.

Where to cross the equator;

When a ship has lost the trade, she should in proceeding to the northward, endeavour to keep between lon. 65° and 68° E., in case of meeting with light winds and easterly currents near the equator, which might carry her near the Maldivas. When she has reached lat. 3° or 4° N., in October and November, northerly winds may be expected, which will probably hang more to the Westward than to the E. of the N. point.

And how to proceed northward, &c.

With the shifts, advantage must be taken to tack as expedient. The sea being generally smooth, a ship after getting into 6° or 7° N. lat., will soon get to the northward of the Laccadiva's, if every advantage is taken of the favorable changes of wind; and she may then stand to the N. Eastward upon a wind, till the coast is seen. Or if bound to the southern part of the Malabar Coast, she may pass through the Eight or Nine Degrees Channel, between the Maldiva and Laccadiva Islands; or through the 1½° channel, if bound to Ceylon.

Should a ship bound to Ceylon adopt this passage, in March, April, September, or October, she may run to the eastward, keeping nearly on the equator or a little south of it, and pass the Maldivas through the 1½° channel, the equatorial channel, or to the south of the whole of these Isles.

To sail from Mauritius.

Ships which sail from Mauritius for Ceylon or the Bay of Bengal, from March to September, may steer to the northward on either side of Cargados Garajos, then to the eastward of the Seychelle Islands, and pass through the equatorial channel or 1½° channel of the Maldivas. And the latter channel is preferable to the 8° or 9° channel, for ships coming from the Mozambique Channel, toward Ceylon or Madras in the S. W. monsoon.

Some ships bound from Mauritius to the Bay of Bengal in November, December, and January, have steered to the N. N. E.ward by Boscawen's Passage till they got within 2° of the equator, then with the westerly winds which are found near the equator, they steered eastward as far as requisite, but this route is sometimes tedious: the parallels of 1° to 2° or 3° south, are considered the best for getting N. W. and Westerly winds for running down the easting.

The same route may be taken early in the season.

From the Cape of Good Hope, the route by Boscawen's Passage may be taken previously to the setting in of the S. W. monsoon, but the passage on the east side of Madagascar, seems preferable at such times. Notwithstanding, I have twice in March proceeded by Boscawen's, or the Middle Passage, to Bombay.

Two abstracts of passages at such times.

We left the Cape in the Carron, February 6th, 1798, got the trade March 6th, in lat. 26° S. lon. 67° E. In crossing it, the wind was seldom at S. E., or even E. S. E., but in general fixed at E. by N., veering from E. N. E. to E. by S. On the 13th, lost the trade in lat. 10° S. lon. 64° E., having experienced a daily current to the westward. On the 20th, in lat. 4° S. lon. 62½° E., the current changed, and set four days to the eastward, at the rate of 62 and 64 miles daily. When in lat. 2° S. lon. 60° E., on the 23d it abated.

From the 13th, at losing the trade, the winds were very variable till April 1st in lat. 4° N. lon. 60½° E. we unexpectedly got a remnant of the N. E. monsoon, and a daily current to the westward till in lat. 11½° N. lon. 56° E. on the 7th. Here we were involved by calms and faint airs 7 days. On the 14th, in lat. 14° N., a steady breeze commenced at west, and veered gradually to N. W. and N. N. W., with which we arrived the 24th of April, at Bombay.

In the Anna, we left the Cape, February 15th, 1800, and got the S. E. trade the 8th of March, in lat. 28° S. lon. 69° E. The wind in crossing it at this time, kept generally at E. S. E. and S. E. by E., but we lost it in lat. 13° S. lon. 69° E., on the 14th.

From this time we had the current changeable, mostly setting southward, with very light variable winds till we passed the equator 29th, in lon. 68° E.; had then the wind from N. N. E. to N. N. W. in general, with which we tacked often till April 12th, then in lat. 7½° N. lon. 69° E. From hence, the wind kept mostly between N. by W. and N. W., with a southerly current in general. Stood to the N. N. Eastward, only making a few short tacks to the westward occasionally, till we cleared the N. W. limit of the Laccadiva Islands on the 18th, without seeing any of them. After making the coast at Geriah, arrived the 29th at Bombay, having experienced no remnant of the N. E. monsoon, as we did on the former voyage in the Carron, April 1st, in lat. 4° N.; although at this time, we reached the same latitude on the 2d of that month, only one day later.

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## *DIRECTIONS for the PASSAGE to the EASTWARD of MADAGASCAR.*

The passage east of Madagascar & the Inner Passage compared.

IN THE MOSAMBIQUE CHANNEL, there being several dangers, whose positions are not well known, and light variable winds in it at times, particularly in August and September, many navigators now prefer to pass to the eastward of Madagascar, where the winds are more steady. Ships may proceed by this route from February to October; and although the distance by it, is somewhat greater than the passage through the Mosambique Channel, this is rendered of no importance, as you have better winds, more particularly in August and September.

A ship intending to follow the route to the eastward of Madagascar, after passing the Cape, should get into lon. about 52° or 53° E. before entering the trade, or in crossing the parallel of 27° S. latitude; for she may find it impossible to make any easting in it, till she get to lat. 18° or 19° S. Adjacent to the S. E. part of Madagascar, E. N. E. winds prevail, extending several degrees from the land. These are called Fort Dauphin winds by the French, as they are most constant along that part of the coast, and sometimes force a current to the southward of 40 and 50 miles per day, near the shore; consequently, a ship intending to touch at Fort Dauphin for refreshments, ought to fall in with the land to the northward of the Bay. Should she fall to leeward, it will be found difficult to beat up against the current, but it does not extend far from the land. How to proceed for the former. Fort Dauphin winds.

These winds and currents, do not however, appear always to prevail, for the London, on the 30th April, 1699, made the south part of Madagascar bearing W. S. W. about 6 leagues, then in soundings 46 fathoms at 6 A. M. She steered east 19 miles till noon, lat. observed 25° 26′ S., then in 50 fathoms, and had fresh gales from S. S. W. to S. S. E. From hence, she steered for Bourbon, passed in sight of that island on the west side, and anchored at Port Louis on the 17th of May.

In steering to the northward through the trade, a ship should continue in lon. from 51° to 52° E. till she is in lat. 15° S., being then past Cape East, where the coast trends to N. by W. true bearing, she may edge in, and make the land at discretion. It should not be made to the southward, near the Deep Bay of Antongil, as there might be difficulty in getting to the N. Eastward, round the east part of the Island, called Cape East. How to pass up the east side of Madagascar

CAPE AMBRE, the northern extremity of Madagascar, is in lat. 12° 2′ S. lon. 49° 25′ E. by mean of several ships observations and chronometers. In a run of 12 days from it to Bombay, I made it by 3 chronometers, in lon. 49° 22′ E., allowing Bombay in 72° 58′ E. Mr. Stevens, (a correct observer), on the passage to Bombay in the Elphinstone, June 1803, made it in lat. 12° 02′ S. and in lon. 49° 25′ E. by mean of upwards of 200 lunar distances, measured to it by chronometers. CAPE EAST is about 65 miles east from the meridian of the former, by recent observations, which will place it in lon. 50° 30′ E.; its lat. is about 15° 14′ S. If a ship do not make the land to the northward of Cape East, she ought certainly to see Cape Ambre, for a point of departure, which is a low point of land, terminating in a ledge of rocks at the water's edge, with several conical hills near it to the southward. In passing along the N. E. part of Madagascar, the coast appears sterile, and the shore rocky; a little inland, the country is mountainous. Geo. position of Cape Ambre and Cape East. The N. E. part of Madagascar should be seen.

A course made from Cape Ambre, between true N. and N. by E. is the safest track, till clear of the small islands which lie to the N. Eastward and N. Westward of it.

The variation in lat. 10° S. nearly on the meridian of Cape Ambre, was 13° W. in 1802, therefore, a course from it by compass N. N. E. is very proper till past the African Islands, in lat. 5° S.; she may from hence, steer a direct course N. E. for Bombay. A ship should not make above 1½° or at most 2° E. by chronometer from Cape Ambre, till past the African Islands. To proceed from it to Bombay.

It must be observed, that off the north end of Madagascar, the current generally runs strong to the westward all the year round. From Cape East to Cape Ambre, it sets along shore to the northward, and the wind on this part of the coast, generally veers to the southward when the sun is in the northern hemisphere. Current.

The Ocean and Addington went this passage early in the season; they left the Cape, February 25th, 1803, and did not go to the eastward of lon. 51° 20′ E., in passing Madagascar. The trade prevailed mostly at E. by S. and E. S. E. On the 16th March, they stood to the westward to make Cape Ambre, but did not see it. From lat. 13° 40′ S. lon. 50° 40′ E. they made a north course by compass 154 miles, then steered N. by E.; from lat. 5° S. to 10° N. the winds were very light and variable, which prevented their reaching Bombay till the 7th of May. Abstract of the route of two ships by this passage.

Another abstract.

In the Anna, we passed Cape Aguilhas the 27th of June, 1802; got the trade July 1, h, in lat. 27° S. lon. 51° E. Between the 25° and 20° S. lat. the wind was mostly at E. by N. and E. N. E. and sometimes N. E. by E. which obliged us to make two short tacks: our lon. being 50½° E. we were afraid of getting near the land with the Fort Dauphin winds, but experienced no westerly current. In lat. 19° S. the wind veered to E. S. E. and next day to S. E.; on the 17th, made the coast in lat. 14° 20′ S. and steered along it to Cape Ambre; at 8 A. M. this Cape bearing S. by W. ¾ W. by compass, steered N. N. E. ½ E. 84 miles, then N. N. E. till in lat. 5° S., then N. E. till we reached Bombay, July 31st. On the day we passed Cape Ambre, had 45 miles of northerly current; it set strong in this direction along the shore south of the Cape, and also beyond it to the northward.

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# *DIRECTIONS for SAILING to the Islands RODERIGUE, MAURITIUS, and BOURBON:*

## DESCRIPTION OF THEM, AND THE PASSAGE FROM THENCE TOWARDS INDIA.

Instructions for proceeding to Mauritius, and the adjacent islands.

IN SAILING FROM THE CAPE OF GOOD HOPE, towards any of these islands, the easting must be made in a high southern latitude, as best corresponds with the season of the year, agreeably to the instructions already given for proceeding towards India.

In entering the trade, or passing the parallel of lat. about 27° S. a ship should be nearly on the meridian of the island to which she is bound, that she may not be obliged to haul close to the wind, should it hang from the eastward. If bound to Roderigue, (called also Diego Rais) the 27° of S. lat. may be crossed in lon. about 63° E.; if to Mauritius, in lon. about 57½° E., or in 56° E. if bound to Bourbon.

Winds.

When the sun has great north declination, it may not be absolutely requisite for ships which sail well, to reach the meridian of their port so far southward, the trade wind *then* blowing more from S. E. and E. S. E. in general, then from E. and E. N. E. It must also be observed, that there is a kind of northerly monsoon in the vicinity of Mauritius and Bourbon, from November to April, during which period the winds are very variable, often from N. E. to N. W. particularly from the latter quarter. From November to May, gales of wind are liable to happen in these seas: at Bourbon, there is generally one or two each season, and in some years a hurricane. Although the latter have been known to happen in December, at Mauritius, also in January and February, they are more liable to be encountered in March or April, when they blow very severe. Like the hurricanes in the West Indies, they are not frequent.

Gales and hurricanes.

Geo. site of Roderigue.

RODERIGUE, is situated in lat. 19° 41′ S. lon. 63° 10′ E. by the best accounts, the variation 13° W. in 1802. It was the practice when navigators had no means to correct their longitude but the variation, for ships bound to Mauritius, to get a sight of Roderigue, and then steer westward for their port; such circuitous tracks are no longer requisite, since marine chronometers and lunar observations are now in general use. Throughout this work, when the variation is mentioned, it must be considered only as useful to correct the course by compass, and not the longitude; for it is presumed, that all navigators in charge of ships, which are to navigate between Europe and India, or in the Indian seas, are in possession of one or two chronometers, and practice lunar observations for the longitude.

The Island Roderigue extends E. and W. about 15 miles, and is about 6 or 7 in breadth from N. to S.: it is high uneven land, which may be seen 12 or 14 leagues in clear weather. Reefs and shoals encompass it, extending from 3 to 5 miles from the shore, except at the N. E. part of the Island, where it is bold, having within ½ a mile of the shore 16, 18, and 20 fathoms; from this depth, in standing to the northward, it increases to 25, 30, 40, and 45 fathoms, 3 miles from the shore, then no ground. Farther westward, the soundings are more gradual. Description of it.

Near the middle of the Island there is a remarkable peak, which answers as a guide for the road or harbour. When this peak bears S. you are abreast of the road; when it bears from S. by W. to S. S. E. you may stand in shore to 16 or 18 fathoms, but the bottom in general is coral rocks, though in some spots, sand and mud. This road or harbour (called Mathewren Bay) is safe when you are in, but the channel is intricate. Vessels which have occasion to touch here, should stand within ½ a league of the N. E. part of the island, and then coast along the reefs till the northernmost point of the island bears S. W.; they may then make short tacks, whilst waiting the return of their boat, which should be sent on shore in time, lest she fall to leeward of the houses; they ought then to sail at a musket-shot distance, along the reef which lies at the northern point, and so soon as the flag upon the houses bears S. W. *by compass*, with the larboard tacks on board, they should steer S. W. by S. to pass to leeward of several rocks, which lie off the edge of the reef; then they may anchor in 9 fathoms sandy ground, about a pistol-shot from the reef. The tail of the reef, forming the bay on the east side, will then bear N. E. 3 miles, the flag, S. W. 3° S. 1½ mile, Diamond Island, which is the nearest, W. by S. 5° S. 3 miles; Boobie's Island, the farthest off, W. by N. 5° N., and the point of breakers on the starboard side, N. W. by W. near 4 miles. There is a small level spot of land between 2 hills, with some houses, where a resident and some soldiers are stationed. An extensive shoal, called the Middle Ground, is situated in the harbour, on some parts of which, there are 3, 2, and 1½ fathoms, with gaps of 6, 7, or 8 fathoms, between these shoal patches. Ships used to go out by the eastern channel, the way they came in, but this is very dangerous, as they must run across the Middle Ground with a scant wind. The passage out by the west side of the harbour is far preferable. A ship leaving it by this western or leeward channel, should run so far to the westward, as to bring the peak a sail's breadth to the eastward of the governor's house; keeping it so, or a little more open, it will bear about S. ½ E. and the course will be about N. ½ W. through a safe channel, in soundings 17, 18, 16, 13, 12, and the least water 11 fathoms;* and when the east point of the island is open with the east point of the bay, the depth will be 18 fathoms, then clear of the shoal. There are gradual soundings off the N. W. part of the reef, and off Booby Island; it shoalens regularly from 30 fathoms, 2 or 3 miles off, to 7 or 8 fathoms, within a cable's length of the reef. To sail into the harbour. Anchorage, &c. To sail out by the western channel.

In sailing into, or out this harbour, a good look-out from the fore or fore-topsail yard is advisable, for the shoal coral reefs may often be easily seen, when the water is clear: a boat a-head, is also a necessary precaution for those who are unacquainted. A caution.

In the harbour there is a regular tide, the flood setting eastward, and the ebb to the westward, at the rate of 2 miles an hour, and flows perpendicular about 6 feet; at full and change of moon, it is high water at ¾ past 12 o'clock. Tides.

The only inducement a ship can have to touch at this place, is the want of fresh water, there being plenty of this necessary article in the harbour, and also wood for fuel. Fish may be caught in abundance, but some of them are of a poisonous† quality; which the Wood and water.

* A Rocky Patch has been discovered, nearly in the middle of the western channel, and lately there has been a blue buoy placed on it. The peak just open to the west of the large house, leads a ship between the Rocky Patch, and the western extremity of the Middle Ground.

† These fish which are noxious, probably feed on the vegetating poisonous coral at the edges of the reefs. Abbe Rochon states, that several kinds of poisonous fish are found on the coast of Madagascar, which are dis-

people in Commodore Tiddeman's squadron found, was confined to those caught in deep water, with hook and line, whereas those got by the net or seine, in shore, were good and wholesome.

Winds and currents.

At Roderigue the trade wind blows more constant than at Mauritius or Bourbon, prevailing between E. and S. E. greatest part of the year; the weather is sometimes cloudy, with showers of rain, when the wind is strong; but more frequently hazy and dry, with a moderate trade. The stormy months here are January, February, and March, when a hurricane sometimes happens. The current throughout the S. E. trade, generally sets with the wind to the westward, from 5 to 15 miles daily; but at times it runs eastward, in opposition to the wind, as is the case at Roderigue.

Mauritius.

ISLE OF FRANCE, called MAURITIUS, by the English and Dutch, is situated about 100 leagues to the west of Roderigue; it is mountainous, and may be discerned 16 or 18 leagues off in clear weather, but it seldom can be seen at a great distance, the summits of the mountains and other elevated parts of the island being frequently enveloped in clouds.

Geo. site.

This island extends in a N. E. and S. W. direction, the S. W. point being in lat. 20° 27′ ½ S. and in lon. 57° 16′ E., and the N. E. point in lat. 19° 53′ S. lon. 57° 35′ E.

Description of the eastern part,

Great care is requisite when running in with the eastern part of the island in the night, as dangerous reefs project from several places a league into the sea. When a ship approaches the N. E. part, in lat. 20° S., 4 small islands will be seen, at different distances from the N. E. part of the main island. The channel generally used in sailing to the N. W. port, is between the inner island, called the Gunner's Quoin, and the others which lie farther from the shore. Round Island is the most remarkable, and lies about 4 leagues off, in

and the small islands adjacent.

lat. 19° 50½′ S. lon. 57° 45′ E., being about 1 mile in length; it is high, appearing like a haycock, and can be seen at 10 or 12 leagues distance. A ship coming from the eastward, in the latitude of the island, will discover it sooner than the main island, especially in cloudy weather, or when the horizon is hazy. In approaching Round Island, a large barren islet or rock is perceived; this is called Serpent's Island, and lies N. N. E. ½ E. about a mile from the former. Should a ship pass outside of all the islands, and the wind be far to the southward, she would be obliged to work in afterward; it is therefore the practice for ships to pass to the southward of Round Island, keeping at least a large ½ league from it, to give a birth to the reef projecting out to the westward.

About 3 or 4 miles N. E. from the Gunner's Quoin (or Coin de Mire) and about 7 miles W. S. Westward from Round Island, Long or Flat Island, is situated, the greatest part of which is very low land; it is cut in two by a small arm of the sea, and close on the north side there is a large rock, resembling a tower, called Le Colombier, or the Pigeon House, which seems separated from Flat Island, though joined to it by a ridge of rocks even with the water's edge.* The only part of Flat Island that is high, is the west end.

To sail through the channel between them.

When a ship has passed Round Island on the south side, keeping it at least 2 miles distant in passing, she should steer for the Gunner's Quoin, bearing from the former about S. W. by W. ¼ W. distant 10 miles, and give a birth to the west end of Flat Island in

covered by placing a piece of silver under their tongue; for it loses colour, and turns black when the fish are noxious. He also mentions, that the squadron of Admiral Boscawen suffered a considerable loss at Roderigue, for having neglected this precaution. At several places within the tropics, a poisonous quality is supposed to pervade some kinds of fish, at particular seasons. It is generally thought by sailors, that a piece of silver placed along with such fish, when boiled, will turn black, but this may be only a vulgar opinion. The Baracoota, at some of the West India Islands, is considered dangerous to eat at a particular season, although at other times it is generally considered a wholesome and delicate fish; and is thought so, at all times in the Gulf of Persia, and on the Malabar Coast.

* Captain W. Owen of the Royal Navy, says, there is a narrow channel with 11 and 12 fathoms in the middle of it, between Columbier and Flat Island.

sailing along, on account of a reef of rocks extending about a cannon-shot from the S. W. point of a sandy cove, directly opposite to the Gunner's Quoin; as this reef is very dangerous, she ought to keep at least in mid-channel, or nearest to the Gunner's Quoin, taking care not to approach very close to the latter, there being several rocks above and under water, extending from the north side of it, about a musket-shot distant.

Having passed the westernmost of these rocks, the Gunner's Quoin will be approached, from which the island takes its name; it is situated on the west part of the island, which is high and steep close to the sea. From the highest part of the Quoin, Pointe des Canonniers, (or Canonniers Point) bears S. W. 2° W., about 5 miles; but this Point must not be approached near, as a reef of breakers projects from it about the distance of a cannon-shot. Among these islands the currents set strong for about an hour at a time, often at the rate of 3 miles an hour. The flood sets N. W., and sometimes westward; the ebb to the S. E. and Eastward. They ought to be attended to with care, that a ship may be navigated a little more to one side, or to the other, as circumstances require. Currents or tides.

Between the Gunner's Quoin and the main, close under the Quoin, there is tolerable anchorage in 10 to 20 fathoms, and here the fleet of transports anchored on the 29th November, 1810, and landed the troops prior to the capture of the Island Mauritius.

Should a ship in passing through the channel among the Islands, experience a calm, she ought to anchor with a stream or kedge, in 15 or 20 fathoms gravel or coral, which is the common ground here; this will prevent her from driving on the reef joining Flat Island by currents, or being carried between it and Round Island, where are several shoals, particularly a ledge of rocks extending near 3 miles to the W. N. Westward from Round Island. This ledge, which never breaks but when the sea runs high, renders this channel narrow and dangerous; a ship may notwithstanding, pass through it without accident, but should she fall to leeward of Round Island, it is safest to pass outside of Flat Island also, keeping about 1½ mile from it, and then steer for the west end of the Gunner's Quoin, and Canonniers Point. Anchorage in the channel.

Having cleared this Point, she should run along shore to the Point of Sea Arm, which is about 3 miles farther to the S. Westward, and continue the course, keeping near a mile from the reefs that extend along the coast, taking care to avoid those at the entrance of the Baie des Tortues, (Turtle Bay) as well as those of the Baie du Tombeau (Monument Bay) which project farthest out; to avoid these, she ought to keep in 13 or 14 fathoms at least, in the day-time, and in 20 fathoms during the night. To sail from it toward the N. W. port.

From the Reef du Tombeau, the course is about S. S. W. till the starboard point of Great River, and the mountains of the guard-house, with a small hummock, are brought to bear all in one. When you have got into this bearing, steer S. W. for 2 buoys at the entrance of the harbour, on the reef's end of l'Isle aux Tonneliers, (Cooper's Island) which are distinguished by 2 small flags. This course should be continued till you open the most advanced point of Cooper's Island, near the small hill in the hollow of the cape; then anchor in 14 or 15 fathoms, about a cable's length from the 2 flags mentioned.

If the wind should happen to be at N. or N. W. which is sometimes the case, it will be needless to anchor outside, because you may then easily enter the harbour, the channel being marked out by buoys, with small flags upon them; you must then steer S. E. and S. E. by S. for two heads of mountains, which are called the Two Peter* Boats, or Butts, keeping them a little to starboard, till quite within the first point of Cooper's Island.

In case you should not make Round Island till the evening, and are unable to pass the Gunner's Quoin before night, as it would be extremely dangerous to lie exposed between the islands, when the darkness does not permit you to distinguish objects, it is much safer to make small trips in the offing, or in sight of Round Island, with this caution, however, not

* The highest mountains on this island are about 2600 feet above the level of the sea, and this is one of them.

to stand off farther than 2 leagues from it, and when you tack to keep your broadside toward Mauritius, for fear of the reefs round it; for in this part they extend far out, by which you might get on the shelves before the land is seen. You ought by no means to lie to, in this track, because of the tides.

After passing Round Island, if you are able to discern Flat Island, and the Gunner's Quoin, so as to keep sight of them, which may be done in a bright moonlight night, with fine weather, you may then keep on your course, and sail betwixt them; it will be sufficient if you guard against the ledges of Flat Island, and of the Gunner's Quoin. Having passed the latter, and being about 1½ league to the west of it, you should steer W. S. W. by compass, to range along the reef of Canonnier's Point, on which a fire is generally lighted when any vessels are in sight. When that fire bears S. E. about 3 miles, you will have doubled the reef, and may then keep coasting along, taking care not to approach the shore nearer than 15 fathoms.

It is, however, difficult to distinguish the entrance of the harbour in the night-time, and as you may be easily deceived by the different fires on the mountains, it is much safer, after having passed Canonnier's Point, to anchor in 18 or 20 fathoms, and wait for day-light; above all, when there is little wind you must never venture to come near Canonnier's Point, whether in the day or night, because of eddy tides, which run there with great velocity.

These directions for sailing into Mauritius, are mostly those of M. d'Apres de Mannevillette, and appear to be circumstantial. English navigators, have given the following instructions for sailing to the ports of this island:—

Further directions for proceeding to the N. W. port.

In approaching the N. E. end of Mauritius, when Round Island is seen, steer to pass it on the south side, at 2 or 3 miles distance; Gunner's Quoin will then be seen to the westward; steer direct for it, until it is approached within a mile, then edge away to the N. Westward, between it and *Flat Island*, which has a white rock, called the Pigeon House, on its north side. In passing through, keep nearest the Quoin, and having passed it, at 1 or 1½ mile distance, on the north side, steer S. W. for Canonnier's Point, if the wind is from the land; but should there be the appearance of a sea breeze, steer more westerly, on account of the swell it commonly brings in with it, setting toward the shore. In steering along, keep about ¾ or 1 mile from the reefs projecting from the points; you will pass several batteries before reaching the Pavilions, 2 small flags on the extremity of the north-east shoal, at the entrance of Port Louis Harbour, which is about 8 leagues from Round Island. In the day, the discoloured water on the reefs will be seen at a considerable distance, if a good look-out is kept from the fore-yard, should a ship by chance approach any of them too close. The pilots generally come out to the distance of 3 or 4 miles from the harbour, to carry ships in, particularly if the necessary signal is made. From October to February, when the winds are liable to vary, and sometimes blow from North and N. Westward, the current is then liable to run to the eastward along the north side of the island; and at such times, ships may approach Port Louis with facility, by coming round the west side of the island. This is the best season for ships crossing over from Madagascar to Mauritius and Bourbon.

Geo. site of Port Louis.

Port Louis, is in lat. 20° 9′ 45″ S. and in lon. 57° 28′ E. by the observations of Abbé de la Caille, and d'Apres, corresponding with each other within a mile of longitude. In 1788-9, the mean of 70 distances of ☉ ☾, made it in lon. 57° 29′ E. from Greenwich, the lat. 20° 9′ 33″ S., and the variation in the road at the same time 16° 20′ W. Captain Flinders, made it in 57° 29′ 57″ E. by lunar observations, taken while he was detained as a prisoner of war.

Geo. site of Port Bourbon

Port Bourbon, is the south-east Port of the Island Mauritius, situated in lat. 20° 22′ S. lon. 57° 41′ E. It is little frequented, being on the windward side of the island; the trade wind blowing generally into it, the navigation out, is thereby rendered very difficult; more

so, as the 2 channels are narrow, and formed between reefs. At full and change of moon, there are breezes at times from the land, when a ship may be enabled to get out of this harbour. The eastern channel is of great length, winding in various directions, narrow, and intricate. The western channel, although narrow and winding, is more safe; in entering it you keep Passe, (or Passage Island) which is on the edge of the eastern bank, close a board, and when round it you haul to the eastward, to avoid the point of the western reef, and may then anchor in the bason, in 25 or 30 fathoms. If you are to proceed for the harbour, the channel may be perceived by the colour of the water, as the dangers plainly appear. This harbour is secured from all weather by a reef, great part of this being dry at low water. To enter it, &c.

ISLAND BOURBON, or MASCARENHAS, is of a round form, about 14 leagues from N. W. to S. E. which is its greatest length. There is a volcano near the S. E. part, and the high peaked mountain near the centre of the island, is in lat. about 21° 09′ S. Although this island is larger than Mauritius, it is only a great mountain, in a manner cloven through the whole height, in three different places; the summit is covered with wood, and its declivity, which extends down to the sea, is cleared and cultivated in two thirds of its circuit; the remainder is covered with lava of the volcano, which burns gently and without noise—it only appears a little violent in the rainy season. Island Bourbon.

St. Dennis, at the north part of the island, is the principal place, lying in lat. 20° 52′ S. and in lon. 55° 27′ E., but the anchorage here, is near the shore, and unsafe. There is another bay at the N. W. part of the island, in the district of St. Paul, where there is anchorage, and the sea tolerably smooth, but the landing is difficult. The island has no port where ships can lie sheltered from bad weather, on which account vessels do not choose to remain at anchor, especially during the rainy season. Hurricanes are liable to happen from December to the latter end of April, and are more particularly dreaded about the full and change of moon. In this season it is thought unsafe to anchor, except 4 or 5 days after the new or full moon, and vessels do not remain more than 5 or 6, or even less, for fear of storms at the phases. The hurricanes at Bourbon, are thought to be more violent than at Mauritius; notwithstanding, ships touch at the island in the stormy season, to load coffee, and take in provision. Geo. site of St. Denis. St. Paul. Stormy season.

THE PASSAGE, from the Islands Mauritius and Bourbon toward India, may be followed at all seasons. When the wind is fair, or inclined to keep at S. E., ships leaving Port Louis, will often be able to stand direct to the E. N. Eastward, and pass to the east of Cargados Garajos without tacking, and pass also to the east of Diego Garcia, if bound to the Bay of Bengal; or they may pass on the west side of Cargados Garajos without losing time, if unable to weather those isles and shoals. When the N. E. monsoon prevails in north latitude, it is prudent to get to the eastward as speedily as possible. Passage from Mauritius toward India.

The Alexander, left Port Louis, 30th December, 1810, bound to Madras, had variable winds, chiefly between N. W. and E. N. E., with which she passed to the southward of Diego Garica, and had light winds and calms, by keeping so far south of the equator, which she did not cross till in lon. 92° E. Light winds continuing, she touched at Achen for refreshments and water, having troops on board, where she arrived 26th February, 1811. Sailed from thence, the 4th March, and arrived on the 11th at Madras.

The Sir Stephen Lushington, left Port Louis 22d December, 1810, bound to Madras, and with easterly winds, she steered to the northward, saw the Islands Agalega, Coetivy, and passed over the Fortune Bank in 10 and 12 fathoms; she passed to the west of the Chagos Islands, then steered to the eastward, mostly in lat. 4° to 5° South, with light variable winds till she got within 2° of the equator, in lon. 85° E., and had then strong N. W. and W. N. W. winds, with which she arrived the 6th February at Madras.

This ship kept too far south of the equator in running down her easting; ships following this route from September to March, should keep very little to the southward of the equator, for by keeping within 1° or 2° of it, they will be more likely to have N. Westerly winds, to run down their easting, than by preserving a higher parallel of south latitude.

Ships bound from Mauritius to Bengal Bay, in the N. W. monsoon, may steer to the northward and N. N. E., passing to the east of the Seychelle Islands, then through the $1\frac{1}{2}°$ channel, or the equatorial channel of the Maldivas, which is more direct than the channels to the north of those islands.

Passage from Bourbon by the $1\frac{1}{2}°$ channel to Madras.

The Cornwallis, Captain Burnet Abercrombie, passed the Island of Bourbon about 10 leagues to the east of it, 1st September, 1784, then to the eastward of Agalega and the Seychelle Islands, without seeing them. When near the equator, the wind veered to North, W. N. W., and West, with which she steered east on the parallel of 1° 30′ N., and passed through the Adoumatis or $1\frac{1}{2}°$ channel of the Maldivas, on the 27th September, being at 6 P. M. in lat. 1° 28′ N. lon. 73° 35′ E. by chronometer and lunar observation, without seeing any of the isles on either side. The westerly winds continued brisk, and enabled her to steer direct for Ceylon, saw the Great Basses on the 2d of October, steered along the east side of the island, and arrived at Madras on the 8th of that month, having 11 days passage from the Adoumatis Channel.

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# *EASTERN COAST of MADAGASCAR.*

## WITH SAILING DIRECTIONS.

Geo. site of Fort Dauphin; winds and currents.

EAST COAST OF MADAGASCAR, has been little frequented by English ships for many years past; several of His Majesty's ships, however, in time of war, visit this coast to obtain refreshments, or in quest of the enemy. FORT DAUPHIN, the southernmost port on the coast, is in lat. 25° 05′ S. and about lon. 46° 35′ E. A ship bound there, should make the land to the northward of this port, on account of strong N. E. and E. N. E. winds; which are called *Fort Dauphin Winds*, and prevail greatly, forcing a current to the southward along this part of the coast, so as to render it very difficult to gain the bay, should a ship fall to leeward. Between Fort Dauphin and Cape St. Mary (the south extremity of the island) the coast is generally bold to approach, with soundings within a moderate distance of the shore.

In approaching Fort Dauphin, as the current sometimes sets 16 leagues in 24 hours to the southward, a ship should anchor in the night, to prevent being driven to leeward, if the weather is favourable, and the bottom not rocky.

Instructions to sail toward Fort Dauphin.

When the land is descried in lat. 24° S. you perceive a chain of very high mountains,* and in 24° 15′ to 18′ S. a hummock in the form of a sugar-loaf, is distinguished amidst some small hills near the sea. Ranging along the coast, at $1\frac{1}{2}$ league distance, a Reef may be perceived in lat. 24° 22′ S. which projects to a considerable distance from the shore; and a little farther southward, you discover, through St. Luce's Islands, some small rocky shoals under water, a little removed from the shore, between lat. 24° 35′ S. and 24° 45′ S. Continuing to sail along at the same distance from the shore, a point will be discerned S. W. by W. *by compass*, appearing to stand by itself, with 2 hummocks, more flat than round; and after this, another point, with hummocks of the same shape. These 2 points have been

* The perpendicular height of this chain is supposed to be near 3600 yards above the sea level.

often taken for Point Itapere, which is the next, or third in order, having sharp pointed hummocks. When you come near the second point, steering along the coast, at a league distance, there are shoals, some of which extend above 2 miles from the shore: it is therefore, advisable, to keep an offing of 1½ league.

Itapere rock, whose breakers are always seen, is the surest mark to distinguish the Point, from which it is distant about 1 mile to the S.; but there is no passage between them; these breakers, sometimes, rise very high.

Two leagues W. S. W. *(true bearing)* from this rock, lies Fort Dauphin. The coast between Itapere Point and that on which the fort stood, forms a cove or bay, named Tolonghare by the natives, and Anse Dauphine by the French, who were formerly settled there, and of whose fort, the remains are still visible. Ships generally go within the elbow made by the point.

Having passed Itapere Rock, at the distance of a mile, or a little less, steer for Fort Dauphin Point, which is encompassed with a reef to the distance of a cable's length, having good anchorage within it. A good birth is with Point Itapere E. 5° or 6° S. *by compass*, and the extreme of the breakers nearest the anchorage S. E. by E., the larboard anchor to the N. Eastward, in 7 fathoms sandy ground; the starboard anchor in 6 fathoms, having 28 or 29 feet water under the ship; a third anchor is placed to the N. Westward, if requisite. Anchorage there.

When there is not sufficient day-light to fetch the road, having doubled Itapere Rock, you may anchor in any part of the Bay, if the weather admit, observing that the quality of the ground is not every where the same.

Indifferent water is obtained at the landing place, by digging in the sand, which may answer for cooking and for the stock; but at a small distance inland, there are plentiful springs of very good water.

To the southward of Fort Dauphin Point, there is a bay of foul ground, called St. Luke's, Galleons, or False Bay. The Point is even land, of middling height; and the country mountainous inland, to the N. W. of Fort Dauphin Bay. It is under the government of several chiefs, with whom you must always behave with caution, and the same conduct ought to be observed in all parts of Madagascar where you may have occasion to land. The natives of Madagascar not to be trusted.

TAMATAVE, in lat. about 18° 12′ S., is a village on a low point of land, where there is anchorage within the coral reefs, secure from easterly and southerly winds. To the southward of this place, from 3 to 7 leagues distance, several reefs exist about 3 or 4 miles from the shore; and also about 6 miles N. N. E. from Tamatave, in lat. 18° 07′ S. are some reefs. Reefs near Tamatave.

PLUMB'S ISLAND, (L'Isle aux Prunes) distant about 2 miles from the nearest part of Madagascar, is covered with trees, and seen at the distance of 5 leagues.

When the southerly winds prevail, it is proper for ships bound to ***Foul Point*** to make this Island, and as that place is often preferred to Fort Dauphin on account of its greater facility and better anchorage, those bound there for refreshments, may attend to the following observations. Directions for sailing to Foul Point.

The land about that part of the coast adjacent to Plumb's Island, is low and covered with trees. Three leagues N. N. E. from Plumb's Island, there is a rocky bank with breakers, and 1½ league farther on the same bearing, a shoal with 3 fathoms water on it; one league to the N. N. E. of this, there is another with 4 fathoms, which dangers are about a league from the shore.

From Plumb's Island to Foul Point, the Coast of Madagascar is of moderate height, uneven and woody, rising gradually inland, till double and treble mountains are seen at a great distance. The shore consists of white sand, lined with breakers, projecting 2 or 3 cable's length into the sea. When Plumb's Island bears N. W. *by compass*, about 2 leagues dis-

tant, you perceive on the north side, a small hill nearer the shore than the others, and forming two Paps; they are called the Paps* of Natte, from the village in that quarter, where the Natives often hoist a white flag. Several vessels have mistaken this place for Foul Point, which lies 3 leagues farther north; but this error will be avoided, if you observe that Plumb's Island is visible from Natte, but cannot be seen from Foul Point; if therefore, you bring the Island to bear S. 30° W., *by compass*, when it is disappearing in the horizon, you may steer N. 15° E. for Foul Point, which is on this bearing.

These directions must be followed only during the season of the S. E. winds, for in the season of the N. E. winds, you ought not to make the land to the southward of the place to which you are bound.

The bight of Foul Point, where ships anchor, is formed by a large reef, which begins on the shore a mile to the southward of the village, and extends about $\frac{2}{3}$ of a league N. N. E. *true bearing*. You must come no nearer this reef than a quarter of a league, and range it along, so as to double its northern point at a large cable's length. You distinguish the breakers, but they show less at high water, and with a fresh breeze. When round the north end of the reef, you haul to the S. W., and anchor under shelter of it in 6 or 7 fathoms sand and mud. The north point of the reef will bear E. by N. or E. N. E., *by compass*, the south point of the bight S. by W. ½ W. the village S. W. 1 mile, the land towards Manivoul N. by E. 6 or 7 leagues. You moor E. N. E. and W. S. W.; if you are to remain a considerable time, it is requisite to have a third anchor to the N. W. Within the reef, there is a basin where large ships may anchor, the depths being 6 and 7 fathoms; but it is not very safe, and the cables are exposed to be cut by the rocks.

Anchorage there.

Geo. site. The village of Foul Point is in lat. 17° 41′ S. lon. 49° 36′ E. of Greenwich. Plenty of bullocks and refreshments may be procured here, but the harbour is full of shoals, over which the boat cannot pass at low water. It must be also observed, that Foul Point should only be frequented in the fine season, when the Southerly and S. E. winds prevail, the reef affording no shelter against northerly winds or stormy weather. The winds here are periodical, the S. E. and Southerly, prevailing from April to October or November, and the N. E. or Northerly winds during the rest of the year. This kind of monsoon is experienced in all these seas, from the equator to the parallels of Mauritius and Bourbon, and extends a considerable way to the eastward of these islands.

Periodical winds.

Indication of the proximity of land. A certain sign of land in the season of the northerly winds, and during the greatest part of the year, is a large bank of black clouds, of an even appearance, which gathers during the day, and extends over Madagascar. When seen from the land, this cloud has about 10° of elevation above the horizon; it may be discerned at 12, 15, and 20 leagues distance from sea, and is a sure indication of your approach to the land.

Manourou. MANOUROU, in lat. 20° S. is a village where vessels may lie sheltered within the reef, extending from it to the northward; but this place, and Tamatave, appear by the plans of them, rather confined for large ships; and ought not to be adopted as places of refreshment, unless in a case of necessity, during the fair weather season.

Manivoul. LONG POINT, OR MANIVOUL, in lat. 17° 13′ S. about 6 leagues to the S. W. of the south end of St. Mary's Island, affords shelter in the S. E. monsoon, or fair weather season.

Island of St. Mary. ST. MARY'S ISLAND, the south point, is about 13 leagues N. N. E. ½ E., *true bearing*, from the road of Foul Point. This Island, called by the natives Nossi Ibrahim, or Abraham's Island, extends from lat. 17° 6′ S. to 16° 37′ S. in a direction about N. E. by N.

* These inland mountains, called also Foul Point Paps, (and are the mark for this place) lie about 15 leagues to the westward. There are 4 of them, but in coming from Plumb's Island only 2 are seen.

Between it and Madagascar, the channel is safe for ships of any size, the narrowest part being about 5 miles wide, having from 40 to 45 fathoms in mid channel. Channel within it.

This part of it is formed by Lokinsin Point near the middle of the Island, and Laree Point opposite, on the Madagascar shore. From this Point, a bank projects E. N. Eastward about a mile, with only 2 or 3 fathoms water on it, and the former Point is also environed by a reef.

The south point of St. Mary's is formed by a flat islet, separated from it by a very small channel, around which is a reef extending about ½ a league to the southward. The whole of the eastern side of St. Mary's, is likewise lined with breakers. Islet and description.

On the west side, about 2 leagues from the south point, there is a bay, with an island called Quails Island at the entrance, where small vessels may find shelter. On it, the French had a factory, which they were forced to abandon in 1761, the place being unhealthy, and the natives treacherous.* To anchor at this place, you should steer along the S. W. end of St. Mary's, in 18 or 20 fathoms, and having rounded a large rock off the S. W. point of the Bay, anchor in 18 or 20 fathoms, with Quails Island bearing about south, *true bearing*; Point Laree will then bear nearly true north, distant about 4 leagues. The tide rises here about 4 feet perpendicular. The months most liable to storms or hurricanes, are January, February, and March. Anchorage.

ANTON-GIL BAY, named *Manghabes* by the natives, takes its name from *Antonio Gil*, a Portuguese captain, supposed to be the first European who entered it. Anton-gil Bay.

From the north end of St. Mary's Island, the entrance of this Bay is distant about 10 leagues, bearing *true* north. It is about 14 leagues in length from north to south, and 8 leagues broad at the entrance between Cape Bellones and Point Baldrish, these bearing about N. E. ½ E. and S. W. ½ W. from each other.

In sailing towards Anton-gil Bay, a ship may in the southerly monsoon, pass through the channel between St. Mary's and the main land, or to the eastward of the Island at discretion; but in the northerly monsoon she should not make this Island, for then, a direct course ought to be steered for the entrance of the Bay; she may sail along either side of it as most expedient, the depths of water and quality of the ground being nearly the same, and decrease to 30, 25, 20, and 15 fathoms, as the head of the bay is approached. To sail toward it.

Here are several Islets, the principal one called Marosse, is about a mile in extent, and the same space from the shore. It is in lat. 15° 25′ S., having four smaller islets to the southward, the farthest of these distant from it about 2 leagues. The common anchorage is to the northward of Isle Marosse, at the distance of a musket-shot, opposite to two small sandy coves, in 11 or 12 fathoms. Wood and water are procured here with great convenience, and tents may be erected, safer than on the main, where you must trade for provisions. The river bears N. N. W. *true bearing* from Isle Marosse, and is navigable by boats. The anchorage off this river, is called by the French, Port Choiseul; the water rises about 5 feet, on full and change of moon. Rice, bullocks, &c. are procured here. Anchorage and description.

In departing from Anton-gil Bay, and bound to the northward, you steer along the eastern shore, taking advantage of favorable breezes with the ebb tide. At a small distance southward from Baldrish Point, lies a small Island called Behenter, to the southward of which, ships anchor when trading to this place. From hence, the coast extends about 2 leagues eastward, and is lined with a reef projecting 2 miles out, till it joins another islet called Nepatte; from this islet, the direction of the shore is about N. E. by N. *true bearing*, 4 leagues, and then about N. N. E. ¼ E. to Cape East. To sail from the Bay. N. E. Coast of Madagascar.

* It was first settled by the French, in 1740, and 120 men left there, who were 3 months after cut off by the natives. They re-possessed it in 1743.

Geo. site of Cape East.

CAPE EAST, is in lat. 15° 14′ S. lon. 50° 30′ E.; and the whole of the coast to this Cape, is also lined with reefs, which in several places project 2 miles from the shore; it is therefore, proper, to keep at least an offing of 1 league in sailing along. From Cape East to Vohemare Bay, in lat. 13° 25′ S. the direction of the coast is about N. by W. ½ W. *true bearing*; and N. N. W. to N. N. W. ½ W., from this Bay to CAPE AMBRE, the northern extremity of Madagascar, situated in lat. 12° 02′ S. lon. 49° 25′ E., as described in a preceding section, of "Directions for the Passage to the Eastward of Madagascar." From Cape East to Cape Ambre, the land is generally high and uneven, except near the sea, in some places, it is level, and of moderate height. The shore is rocky, with some islets and coral reefs in different parts, projecting out 1, 2, 3, to 4 miles.

Anchoring places for small vessels.

Exclusive of the places described, there are several other small bays or harbours on the east coast of Madagascar, where small vessels may anchor and procure refreshments, although not so convenient for large ships as those already specified.

Teintique.

TEINTIQUE, situated within the Island St. Mary's, about 3½ leagues N. W. from Point Laree, is one of them. This is a bay or cove, full of shoals at the entrance, having a channel between them, with moderate depths for anchoring inside, in 5, 6, or 7 fathoms, sheltered from all winds, according to the French plan.

Veninguebe Bay.

VENINGUEBE BAY, in lat. 15° 52′ S. about 1½ league to the northward of the east point of Anton-gil Bay, is about ½ a mile wide between the reefs that form the entrance. It appears unsafe, particularly for large ships. On the point of the reef forming the north side of the bay, which is very extensive, the French frigate La Gloire was lost, going out in 1761.

Cape East Bay and Harbour.

CAPE EAST BAY, AND HARBOUR, in lat. 15° 15′ S. are situated on the S. side of the Cape of this name. They are formed by reefs, the soundings in them 4, 5, and 6 fathoms. The Harbour is a small inlet between the reefs, a little to the southward of the Bay, apparently more safe than the latter, but they seem too confined for large vessels.

Port Louquez.

PORT LOUQUEZ, in lat. 12° 48′ S. seems a safe Harbour by the French plan of it. The entrance is in lat. 12° 43′ S. between an extensive coral bank to the eastward, and another to the westward; the latter having an Island on its north part called Sandy Island, which is about 3 miles long. When abreast of the south end of this Island about 1½ or 2 miles distance, the course is about S. by W. *true bearing* between the reefs which form the entrance, and the distance about 5 miles to a safe cove or harbour, having an even bottom of sand, from 5 to 9 fathoms; where ships are sheltered from all winds. The entrance leading to it is about ½ a mile wide, with deep water in it, from 20 to 40 fathoms.

About 2 miles above the harbour, at the head of the inlet, there is a village, and an inner Harbour, having 4, 5, and 6 fathoms sandy bottom, where the French vessels that visit this port, anchor. Between the outer and inner harbour, an extensive bank projects from the point on the eastern shore more than two-thirds across the channel, which makes it very narrow in this part. It is high water at 3 o'clock, and the tide rises 5 feet. A little to the southward of the entrance to Port Louquez, there is a bay very open to the northward, called the False Port.

False Port.

East coast of Madagascar unhealthy in the northerly monsoon.

Relative to the eastern coast of Madagascar, it should be observed, that Fort Dauphin is generally healthy at all times. That from Foul Point, which is unhealthy only in the bad season, the country is more so, as you proceed northward. To prevent your crew from the diseases prevailing there during the unhealthy season, allow none of them to sleep on shore after November.

From Cape Ambre, the currents set generally strong to the westward all the year round, toward the Comoro Islands and the Coast of Africa. Several navigators have experienced a set of 15 or 20 leagues in 24 hours to the westward. Currents between Cape Ambre and the African Coast.

# *DESCRIPTION of the ARCHIPELAGO of ISLANDS, and DANGERS,*

## NORTH, AND NORTH-EAST, OF MADAGASCAR.

SANDY ISLAND, or L'Isle de Sable, in lat. 15° 52′ S. lon. 54° 50′ E. is a flat sandy spot about 15 feet above water, nearly ½ of a mile* long from N. N. W. to S. S. E. and about ¼ of a mile broad, having a sand bank projecting ¾ of a mile towards the S. S. E. It was discovered by the ship La Diane in 1722; and in 1761 the Flute l'Utile† was cast away there. Ships passing to the eastward of Madagascar, if not certain of their longitude, should be careful in crossing the parallel of this low and dangerous Island. Geo. site of Sandy Island.

The Alexander, passed on the west side of Sandy Island, within 5 or 6 miles of it, on the 3d Jan. 1810; the breakers on that side, did not appear to extend far out from the Isle, which she made in lat. 15° 49′ S. lon. 54° 48° E. by chronometer.

CARGADOS GARAJOS, consist of a chain of low islets or sand banks, from 8 to 12 feet above water,‡ with channels between some of them, having anchorage on the N. W. side, to leeward of the isles. Cargados Garajos.

The North Isle, by the French account, is situated in lat. 16° 28′ S. lon. 59° 31′ E., having on it some shrubs, wild sallad, and plenty of good water. A great variety of fine fish, may be caught in abundance at the edge of the reef, and there used to be a few Europeans, and 30 or 40 negroes on the Isle. Geo. site by the French.

Soundings extend 7 or 8 leagues to the N. Eastward of this Isle, and continue to increase in a N. N. E. direction to 80 or 90 fathoms on the north end of the Bank of Cargados Garajos (called Nazareth Bank in some charts) which extends about 56 leagues in that direction from the Islands, as will be found in the sequel of this description. Soundings.

An English commander, who was captured by the Semilante, French Frigate, states, that coming from the eastward, and after getting soundings on the Bank in the Semilante, they steered westward, the soundings regularly decreasing in a run of 6 or 7 leagues, and having got into the proper latitude, they passed between the largest North Isle of Cargados Garajos and another sandy isle to the northward of it; and after hauling round the extremity of the reef until the *tuft of trees* bore about S. E. she anchored in 15 fathoms sandy bottom, with the watering place bearing about east. Directions.

The Semilante with 4 prizes, remained a month here, waiting for intelligence from Mauritius; the people eat the wild sallad that grew on the Isle, caught plenty of fine fish close to the edges of the reefs, and were very healthy.

* Some navigators make it of greater extent.

† This ship had on board 80 blacks, men and women; the whites, who composed the greatest part of the crew, arrived safe at Madagascar after a short passage, in a flat-bottomed boat they made out of the wreck. The blacks were left on the Island, with a promise of speedy relief, who all died except seven women; these remained on it 15 years, living on the shell-fish they could pick up, with now and then a turtle, and having nothing but brackish water to drink. Captain Tromelin, of the ship La Diligente, had the courage and good luck, to land on this dangerous spot, and brought them back to Mauritius in 1776. Abbè Rochon's Voyage.

‡ In 1812, an inundation of the sea, it is said, nearly proved fatal to the few fishermen residing on these Isles.

From this place, they steered to the southward 6 or 8 leagues, till clear of the numerous sand banks, the southernmost danger being in lat. 16° 48′ S.: they were obliged to bear away for one shoal, and haul up for another, but there is safer passages by steering out in a westerly direction.

A ship coming from the eastward, may haul to the northward of all the banks, and run down to the west of them, which passage is free of danger, excepting the *visible reefs*, with breakers on them. A shoal bears west 6 or 7 miles from the north point of Sandy Island.

Cargados Garajos, is the St. Brandon Reef of the old charts: H. M. ships Cornelia, and Sir Francis Drake, visited this chain of islets and shoals, in January 1810, and Lieut. J. Henderson, an excellent observer, determined their situations as follows.

Geo. site by the English.

South Islet anchorage, in lat. 16° 47′ S. lon. 59° 34½′ E. by ☉ ☾ and 59° 33½′ E. by chronometer.

North Islet anchorage, where there are several huts, in lat. 16° 27½′ S. lon. 59° 39′ E. by chronometer, and 59° 40¼′ E. by ☉ ☽. On this islet there is brackish water, but none at the South Islet; fresh water being procured at an islet called Water Isle, which bears S. by E. 7 miles distant from North Islet.

South Islet Flagstaff, bears S. 27° W. from North Islet Flagstaff, distant 23 miles. The south point of the shoal bears from its north point S. 20° W., distant 30 miles. These are all *true* bearings, the variation of the compass being 9° Westerly.

This narrow chain of islets and reefs, is steep to, on the east side, having in general 32 or 34 fathoms water within a ¼ or ½ mile of the breakers; but the west side is not so steep, and may be approached in several places to 18 or 20 fathoms.

The Huddart, 25th December, 1810, made the south islet in lat. 16° 47′ S. lon. 59° 31′ E. by chronometer, and after tacking from the east side of chain, she stood 28 miles to the southward, then tacked to the N. E. and weathered the islets and dangers without seeing them. On the 27th, at 2 P. M. she sounded in 25 fathoms coral, in lat. 14° 50′ S. lon. 61° 1′ E. by chronometer and noon observation; she steered from hence N. E. ½ N. 26 miles, and sounded in 21 fathoms at 8 P. M.; steered N. E. ½ N. 33 miles till 3 A. M. in soundings from 21 to 32 fathoms coral and weed, which was the last soundings, then in lat. 13° 41′ S. lon. 61° 15′ E., after steering 13 miles to the northward, had no ground at 80 fathoms. These soundings of the Huddart, were on the Nazareth Bank, which is thought to be a continuation of the Bank of Cargados Garajos, although it is uncertain, whether or not they be separated by deep water.

Nazareth Bank.

SAYA DE MALHA BANK (or Coast of Mail) has lately been found to extend above a degree more to the northward than formerly supposed. Its southern extremity is thought to be in lat. about 11° 30′ S., and its northern extremity is known to extend to lat. 8° 18′ S.

Saya de Malha Bank.

Extent.

His Majesty's ship Galatea, on the 26th July, 1811, got upon a bank of 9 and 10 fathoms, the coral rocks distinctly seen under the ship, then in lat. 8° 36′ S. lon. 59° 58½′ E. by chronometer, and the bank appeared to extend east and west about 5 miles.

Geo. site of N. W. part.

This place where the Galatea got upon, was probably the N. Western patch of the Saya de Malha Bank, which appears at the N. W. and Western parts, to consist of detached* large coral patches, with very deep water between them; for several of the company's ships have lately had soundings near the same situation, and carried them far to the northward, and also to the eastward. The Lady Carrington, in July 1814, got soundings of 12 and 13 fathoms, on Saya de Malha Bank, in lat. 10° 30′ S. lon. 61° 50′ E. by chronometer, and steered from thence N. N. E. and N. E. by N., deepening regularly on these courses, to 75 fathoms in lat. 9° 43′ S. lon. 62° 20′ E., then lost soundings: the Bank, therefore, seems to be of great extent in longitude, as well as in latitude.

* The doubtful bank, called St. Michaels, is probably only one of the N. W. patches of Saya de Malha, as the situation assigned to it is nearly where the Galatea had soundings.

| | | Lat. S. | Lon. E. | |
|---|---|---|---|---|
| Northumberland, 1st Jan. 1811, had soundings on the bank in | | ° 9 19 | ° 60 26 | By lunar observations agreeing within 3 miles of chronometers by chron. |
| She had from 7 to 10 | fathoms coral | 9 3 | 60 43 | |
| 18 | ditto | 8 55 | 60 38 | |
| 40 | ditto | 8 51 | 60 37 | |
| Huddart, in December, 1810, had 32 | ditto & sand | 10 44 | 60 44 | |
| 14 & 15 | ditto | 9 55 | 60 56 | then no ground steering N. by E. |
| Preston and Pœnix in company, December, 1810, 10 | ditto | 9 45 | 60 32 | By the Phœnix chronometers. The Preston's chronometers made the lon. about 15 miles more easterly. |
| No ground | | 9 42 | 60 31 | |
| 6¾ & 7 fath. | coral | 9 21 | 60 14 | |
| 9¾ & 10 | ditto | 8 44 | 60 10 | |
| No ground | | 8 42 | 60 10 | |
| Ditto | | 8 31 | 60 7 | |
| 12 & 13 fath. | coral | 8 30 | 60 5 | |
| 12 to 15 | ditto | 8 19 | 60 3 | |
| No ground | | 8 17 | 60 3 | |
| Marchioness of Ely & Lady Carrington in July, 1814, had 49 fathoms | | 10 58 | 61 40 | chro. from Port Louis. |

Geo. sites, and soundings on it.

From this situation, they steered N. Eastward in soundings from 41 to 20 fathoms, till in lat. 10° 25′ S. lon. 62° 10′ E. and from hence to lat. 10° 0′ S. lon. 62° 20′ E., had regular soundings of 12 to 14 fathoms, then deepened gradually to 75 fathoms in lat. 9° 44′ S. lon. 62° 30′ E. which was the last soundings got on the eastern edge of the bank, steering N. E.

The bank is also of great extent east and west, as appears by the soundings and observations of these ships, which has also been experienced by others. Extent east and west.

The ship, Charles the Second, from Bombay bound to England, 25th February, 1698, got soundings 46 fathoms ouze, on Saya de Malha Bank, in lat. 10° 34′ S., and hauled up E. S. E., thinking themselves on the eastern edge of it. Having run 27 miles E. S. E. in soundings not less than 40 fathoms, then at 1 A. M. shoaled fast to 12 fathoms coral and shells; and now, thinking they were rather on the west, than on the east side of the bank, tacked and steered W. by N. to N. W. till day-light, deepening to 43 fathoms ouze as before. At day-light steered S. W. with a fresh N. E. wind, and at noon shoaled again to 14 fathoms coral rock, and weeds; afterward, deepened gradually to 50 fathoms, having run 31 miles on a S. W. course, then got no ground with 60 fathoms of line.

Navigators are still left in a state of uncertainty, whether or not any part of this bank is dangerous, but as the Northumberland had 7 fathoms on one part of it, and the Preston only 6¾ fathoms coral rock on a different part, caution ought certainly to be used by those who happen to get upon this bank; more particularly, as a French navigator of the Island Mauritius, has lately asserted, that there are dangers on the southern extremity, where a ship would be liable to strike on some of the coral patches; and the Eliza, French schooner, is said to have been in 4 fathoms, close to breakers on this part of the bank. May be dangerous.

The English Pilot of 1716, marks only 2 fathoms on its southern part, and represents the northern parts to be dry; but this is probably incorrect, as there is reason to believe, that no part of this extensive bank is dry, although *perhaps* some of the coral patches have not more than 3 or 4 fathoms water covering them.

AGALEGA OR GALEGA, was examined by Captain Briggs of H. M. S. Clorinde, on the 12th of January, 1811, who seems to have fixed the situation of this Island very cor- Agalega.

rectly, which was previously not well ascertained. The landing was found difficult on account of the heavy surf, the Island being surrounded by a reef. A person who formerly had commanded a French privateer, was at this time settled on the Island, having under him a colony of negroes, who cultivated part of the ground with maize, wheat, &c.

This Island is not more than 1 mile in breadth, extending about 11 miles N. N. W. and S. S. E., all low land, with a gap in the middle, (where the sea breaks through on high tides) which gives it the appearance of 2 islands, if viewed at a distance.

Geo. site. The north end was found to be in ..... lat. 10° 20′ S. ..... lon. 56° 37′ E.
South end ..... 10 31 ..... 56 40

By the chronometers of the Clorinde and Minerva in company.

The ship, Sir Stephen Lushington, passed in sight of this Island on the 28th of January, 1811, and made it in lon. 56° 39′ E., by chronometer, and other ships have lately made it nearly in the same longitude.

John de Nova Group. JOHN DE NOVA, in lat. 10° 5′ to 10° 24′ S. lon. about 52° 20′ E., but some navigators make it about 20 miles more westerly, is the southernmost of the groups of islands, north-eastward from Cape Ambre. They are an elliptical chain of low islets and reefs, extending N. E. and S. W. 6 or 8 leagues, having a bason in the centre, with 7 or 8 feet water on the bar leading to it, at the north part of the chain, where there is good ground for anchoring. The soil of these islets is mostly coral, on which grow trees of small size. Turtle and fish of various kinds are plenty, but no fresh water is to be obtained, or other refreshments. The tide sets N. E. and S. W., and rises 4 or 5 feet.

is probably

the Twelve Islands. The group called the TWELVE ISLANDS, *said* to be situated about 10 leagues to the N. W. of John de Nova, seems to be one and the same group, as John de Nova, consisting of 2 islands of considerable extent, and 10 small ones, making in all, the number 12.

St. Lawrence. ST. LAWRENCE, is a reef with 2 small sandy islands on it, said to lie about 15 leagues to the N. W. of John de Nova, in lat. 9° 33′ S.

St. Pierre. ST. PIERRE, a small island, in lat. about 9° 18′ S., supposed to be situated 8 or 10 leagues N. Westward from St. Lawrence, is low, composed of coral and lime-stone, about 3 leagues in circuit, and may be seen 5 or 6 leagues off. The tallest trees on it are scarcely 10 feet high, and it is steep to, having 20 fathoms a cable's length from the shore. M. D'Apres has placed it in 51° 55′ E. lon. from London, according to the accounts of ships that made it in coming from Madagascar. It is the nearest Island on the eastern side of the channel, when steering from Cape Ambre to the northward for India. Mr. Morphey, who in 1756, was sent from Mauritius to explore these parts, named it Isle de Cerf.

Cosmoledo Group. COSMOLEDO ISLANDS, are the nearest on the west side of the channel to the north of Cape Ambre, distant from it about 52 leagues, and about N. W. by N. *true bearing*, from it. Three days after departing from Isle St. Pierre, Mr. Morphey, on August 13th, had a strong current to the westward, and made the Cosmoledo Islands. They are lime-stone and coral flats, covered with shrubs, the reef forming a semicircle, whose diameter is about 8 leagues, with green water within it. The centre of this group is in lat. 9° 50′ S. and lon. supposed about 48° 20′ E.*

Glorious Islands. GLORIOUS ISLANDS, said to be 2 small Islands, situated on a reef, about 35 leagues to the W. N. W. of Cape Ambre, in lat. 11° 36′ S., but their existence is very doubtful.

* Ten leagues N. N. W. from the N. Western extremity of the Cosmoledo Group, a low sandy Island is said to have been seen in the English Snow Drake.

ASSUMPTION ISLAND, said to be situated in lat. 9° 47′ S. distant about 18 leagues westward from Cosmoledo Group, is low with some sand downs, covered with shrubs, being about 7 miles in length, according to the French plan, extending nearly E. S. E. and W. N. W. Mr. Morphey, who examined it August 15th, 1756, anchored on the west side: on the north and east sides, it is fortified by a coral reef, steep to. Assumption Island.

ALDABRA ISLANDS, (called also Aro, Arco, Atques, and Albadra) are 2 or 3 in number, but joined by islets and rocks, which makes them appear as one Island.* A bason is formed between them, having an opening to the eastward. After leaving Assumption, Mr. Morphey, on the 18th August, discovered Aldabra, and found their lat. between 9° 24′ and 9° 35′ S. They are thought to be situated 12 or 13 leagues W. N. Westward from Assumption Island. Aldabra Islands.

These were probably the Islands seen in Asia, 10 years aftewards, although the preceding description differs greatly from the following account, extracted from the Asia's journal. This ship, made Cape Bassas, 20th November, 1766, homeward-bound from Bombay; light winds then followed, with frequent strong ripplings, and at noon, December 15th, a low island bore from W. by S. to W. by N. ½ N. distant 2½ or 3 leagues; the observed lat. was then 9° 19′ S. which made the Island in lat. 9° 21′ S. It seemed covered with tufts of trees or shrubs on the east side, steep to, without breakers, having red cliffs on that side, and appeared to extend E. S. E. and W. N. W. 6 or 8 miles in length, and 3 or 4 miles in breadth. From noon she steered S. by E. 8 miles, with the wind westerly, squally and rain, when at 2 P. M., 16th December, another island was seen from the mast-head, bearing S. W. about 8 leagues. At sunset, it had the appearance of a hummock, bearing west, with low land extending from it W. by N. ½ N., distant 4 or 5 leagues. Hove to, during the night. At sunrise the Island bore from W. ½ S. to S. W. by W. distant about 3 leagues; the wind being now from southward, she could not weather it, then bore away to the N. W., and passed between it and the Island seen the preceding noon. At 8 A. M., the body of the southernmost Island bore south, distant about 2 leagues; same time, the body of the other to the northward bore north, distant about 6 leagues. At noon, 16th, lat. observed 9° 44′ S. the southernmost Island distant 4 or 5 leagues, the hummock bearing E. ½ S., which makes it in lat. 9° 42′ S. This Island is low, with a small hummock near the centre; it consists of white sand, with a few shrubs, about 4 miles in length east and west; a sand, with breakers, projects about ½ a mile from the east point, but no other breakers were seen, nor had she any soundings near these Islands, which were supposed the Alque's (or Aldabra's.) From thence, the Asia had light winds, and 4 days after, passed Mayotta on the east side, at 6 leagues distance, without perceiving any shoals or dangers: she got on the Parcel Bank the second day after passing Mayotta, and continued on it a whole day, steering to the S. W. and Westward. Afterward, she made the Island John de Nova, and the Bassas de India; from the former to the latter she made lon. 2° 16′ West by dead reckoning, which seems to be nearly the exact difference of longitude between these Islands, as may be seen by the description of them given in this work. The French account of them differs from the position given in the Asia's journal, as here described. She passed to the eastward of Mayotta, got on the Parcel Bank, saw John de Nova, and the Bassas de India.

In the Lord Nelson, they thought breakers were seen nearly in the latitude of the Aldabra Islands. Captain Spottiswood's journal states, June 17th, 1802, "at 10 A. M. saw breakers to the S. E., distant about a mile, and a little after to the N. E., other breakers were seen. At noon, the breakers from the masthead bore E. by S. 5 or 6 miles, and from the observed lat. must be in 9° 19′ S." It was cloudy, with rain, when near the breakers, and the appearance of land was seen to the eastward at 7 or 8 miles distance.† The sea only broke In the Lord Nelson, they saw the appearance of breakers about the latitude of Aldabras.

* This account is from the French; but it was most probably these Islands that were seen in the Asia, if so, there [illegible] wide channel between them. The Castlereagh, lately passed along the north side of these Islands, as will be seen in the following description of them.

† This seems really to have been [illegible] agreeing nearly with the situation of the N. W. Aldabra Island, as [illegible] Lieut. of the Lord Castlereagh.

Probably only imaginary danger.

at times in different places, but a range of discoloured water was visible. The chronometer, measured from the land at St. Augustin's Bay to these breakers 2° E., which makes them in lon. 46° 0′ E. The journal states, that if this reef be joined to the Aldabra Islands, it must extend 7 or 8 miles from them to the westward. But it seems *probable*, that no reef exists in this situation, as will be seen by the description now to be given of these islands.

It appears, that no satisfactory information has been obtained relative to the Aldabra Islands, since they were seen by Mr. Morphey 60 years ago. But the arrival of the ship Lord Castlereagh, belonging to Bombay, has enabled me to point out the true situation of these Islands, as will be seen by the following interesting account, communicated to me by Captain Laing, of that ship, fortunately while this sheet was in the press.

Aldabra Island seen by the ship Castlereagh.

December 15th, 1815. At daylight, thick weather, saw land from the deck, bearing from S. by W. to W. by S., distant from the nearest part about 3 leagues: the wind being light and variable at eastward, bore away to leeward of the land, apprehending that unknown dangers might exist near it.

Capt. Laing's description of them.

Steered along the coast for the most projecting part, and passed it at 2 or 3 miles distance, which after doubling, I found the north side of the Island to lie nearly east and west.

As this land consists of 3 principal Islands, I shall call them, East, Middle, and West Islands; the 2 former appeared to be of equal extent, and West Island about $\frac{2}{3}$ of that extent. East Island appeared to lie in a S. E. and N. W. direction, the east end of which forms the projecting part mentioned above: Middle, and West Islands, extend nearly *true* east and west. A reef of breakers projects from the east end of East Island, at least 3 miles in an easterly direction; and the north side of this Island, appeared to be fronted by several rocks with high breakers, situated close to the shore; otherwise, the sea appeared deep and clear of danger. This Island is of moderate height, here and there interspersed with a few trees, and a hummock near the eastern extreme, close to which the beach is fronted with white patches of sand, and there are other white patches, almost hid by the brushwood and verdure that covers this Island, and gives it a beautiful appearance.

The gap between East and Middle Island, is about $\frac{1}{2}$ a mile wide, with breakers stretching across, and some isles covered with bushes, extending to the southward as far as could be discerned.

Middle Island, is the highest of the 3, the east part of it being most elevated, covered with very high trees, for at least a mile in extent, that may be seen 8 or 9 leagues from the deck of a moderate sized ship. The other parts of this Island are well covered with verdure, and trees interspersed, with some white patches inland and on the beach, which give it a fine appearance. In coasting along this Island, the beach seemed to be steep to, the water not discoloured, I therefore thought it needless to try for soundings.

The channel between Middle and West Island, appeared perfectly clear, about a $\frac{1}{4}$ mile wide, without any indication of breakers or danger; and the water so smooth inside, that any boat might land, there being no surf whatever, and as far as could be distinguished through the gap, no islands or dangers were visible.

West Island, is of a level appearance, and although clothed with verdure, has very few trees or bushes on it of considerable size, like those on the 2 former Islands; but it has like them, several white patches. The coast of this Island, is also perfectly clear of danger, the N. W. end being fronted by a white beach of at least $\frac{1}{2}$ mile in extent, and it may be seen at 6 or 7 leagues distance from the deck of a large ship.

When abreast of the central part of the coast of these Islands, the beach of the extremities could not be seen from the poop, by which it may be inferred, that their northern coast extends about 38 or 40 miles in length; and the north and west sides of them, may be approached with safety, by night or day.

Geo. site.

At noon, when the N. W. end of West Island bore S. S. E. by compass, distant 6 miles, the observed lat. was 9° 19′ S. lon. by chronometers 45° 44′ E. And when I made

the Island Comoro, 2 days after, on the 17th December, my chronometers placed it in the situation assigned to it by Horsburgh, by which it may be inferred, that the lon. mentioned above, is near the truth, and consequently, that the situation of the foregoing Islands is now pretty well ascertained, their N. W. extremity being in lat. 9° 23′ S. lon. 45° 46′ E.

From the appearance of these Islands, I think water must be plentiful, and the timber of sufficient size, to be useful to any ship that might be in distress for spars.*

Shortly after the bearings were taken at noon, a squall from the eastward with rain, obscured the land till ½ past 4 P. M. having run 22 miles per log; it then clearing up, the Island was just visible from the deck, bearing E. S. E. distant about 8 leagues.

NATAL ISLAND, is generally laid down in the charts about a degree to the N. N. Eastward of Aldabra, or in lat. 8° 25′ or 8° 35′ S.; but it seems doubtful whether such Island exists. Natal Island doubtful.

PROVIDENCE ISLAND, in lat. 9° 8′ S. situated to the N. N. E. of John de Nova, already mentioned, is low, about 3 miles long, and ⅓ of a mile broad, nearly overflowed at the equinoctial tides. The north part is covered with cocoa-trees, and the south part with a spungy tree, which resembles the fig-tree, growing to the height of 40 or 50 feet. Providence Island.

Fresh water is plentiful, as well as turtle, and land crabs of a large size.†

This Island extends north and south, the reef with which it is surrounded, begins at the north end, and projects ½ a league from the shore at the southern extremity. A continuation of this reef extends 6 or 7 leagues to the southward of the Island, and its greatest breadth near the middle of this extent is near 2 leagues, the whole space within being filled with banks of sand and coral, several of which are above water, so that at low tide it is scarce passable in a canoe, which without great care, would even ground on it at high water. On this, the French frigate L'Heureuse was lost: she sailed from Mauritius, August 30th, 1769, for Bengal, passed in sight of the Isles John de Nova, about 5 leagues to the eastward of them, the 5th of September; and on the following night, she struck and went to pieces on the south part of the reef. The crew got upon a dry sand, a league within, from which they came to a small island joined with the reef, and about 7 leagues northward of its southern extremity, to which they gave the name of Providence Island. After having remained 2 months on this Island, the crew, in number 35, left it, November 8th, in a boat, which had been lengthened 6 feet; and with the help of N. E. winds, they landed 4 days after on Madagascar, 8 leagues to the south of Cape Ambre.

ALPHONSE ISLAND, is low, of considerable extent, having on it some small trees or shrubs, and during these last 14 years it has been seen by several English ships. It appeared to Captain Ross of the Carmarthen, who passed it on the 12th of April, 1811, to be surrounded with breakers, except at the north end. Alphonse.

The mean of 4 ships observations, by ☉ ☾ ✱ and chronometers, place this Island in lat. 7° 3¾′ S. lon. 52° 49′ E. Geo. site.

About 4 leagues due south from Alphonse, lies a Sandy Isle or Bank a little above water, Sand Bank or Isle.

* These Islands are thought to abound with land turtle, and probably have a good harbour; they are certainly worthy of an examination, by a vessel sent from Mauritius, or from the Seychelle Islands, for that purpose.

By the Asia's account, there seems to be a wide channel between them and another Island to the southward, which was not seen by the Castlereagh, this ship having only coasted along the northern sides of these Islands.

† Many of the Islands in these seas, particularly those in the Chagos Archipelago, abound with land crabs, which are considered very palatable and wholesome food. Some of them weigh from 4 to 6 pounds. At Diego Garcia, I have known them in great plenty.

with a reef of high breakers surrounding it, and extending N. E. and S. W. 5 or 6 miles. There are no soundings within a mile of the sand.

Mahe Islands.

MAHE, OR SEYCHELLE ARCHIPELAGO, is an extensive group of islands, the southern extremity of which, is about 15 or 16 leagues to the northward of Alphonse.

The principal islands of this Archipelago, were discovered in 1743, by Lazarus Picault, and named after the famous Mahé de la Bourdonnais, then governor of Mauritius. These are situated on the middle of a great bank of soundings, Seychelles being the largest, named also Mahe, and is about 16 miles long and 5 broad. On its N. E. end there is a

Harbour and road of Seychelles.

harbour, off Bat River, secured by reefs from all winds; and farther out is the road, sheltered from Easterly and S. E. winds by the Island St. Ann, and Stag Island, but exposed to northerly winds. To the northward of this road, there is a reef about 2 miles off the N. E. end of Seychelles, having a safe channel within it, of 18 and 20 fathoms water. The

Geo. site.

lat. of St. Ann's, and the anchorage on the west side of it, is 4° 35′ S., and the lon. of that Island 55° 35′ E. by observations of Abbe Rochon. The flood sets about S. S. W. and rises 6 feet, high water at 5½ hours on full and change of moon; variation 8° W. in 1811. The Island Seychelles is high land, inhabited in 1812, by about 60 families, who cultivate cotton, make cocoa-nut oil, collect tortoise shell, and build small vessels such as brigs and schooners.*

Anchorage of Island Praslin, &c.

PRASLIN, is a high Island about 8 leagues to the N. Eastward of Seychelles, and the next largest to it. There is good anchorage at this Island, where vessels lie sheltered by the small circumjacent islands, Curieuse protecting it from northerly winds. The lat. of Praslin is 4° 19′ S., lon. of the watering place on the adjacent island Curieuse, 55° 47′ E.; tide rises 6 or 7 feet. Most of the Mahe Islands abound with land-turtle. On the hills, the trees are generally hard wood, and cocoa-trees are plentiful in many of the valleys. The French fed cattle on some of these Islands, and have colonized those of the greatest value, with slaves from Madagascar. Mid-channel between La Digue and Praslin Islands, there are 2 rocks near each other, level with the water's edge. Ten families inhabited Praslin in 1811, chiefly to prepare cocoa-nut oil.

Silhouette Island.

SILHOUETTE, is the next Island to Praslin in magnitude, and is situated to the N. Westward of Seychelles, distant 6 or 7 leagues. Most of the other islands in this Archipelago are small, and some of them very low, with extensive reefs about them.

Bank of soundings, and of the islands on it.

The bank of soundings on which these 3 Islands and the adjacent small ones are situated, is in length N. W. and S. E. about 54 leagues, being of a triangular form, with the acute angle to the S. E. The most easterly islands on the bank, are Fregate's Isle, about 6 or 7 leagues S. Eastward from Praslin, and the Three Sisters, Felicite, and Mariane Islands, 5 or 6 leagues to the eastward of it. The N. Easternmost, is a small islet, in lat. about 3° 50′ S. called Denis or Orixa Island, which lies, by the best accounts, nearly due N. from Praslin. The northernmost of the whole, is called Sea Cows, or Bird Island; it is very low, with

Sea Cows, or Bird Island.

small shrubs on it, thought to be without fresh water, and is environed by a reef. There is anchorage off it in moderate depths, the bottom rocky, mixed with sand. When this Island was explored by the Eagle Cruizer, from Bombay, in 1771, many sea-lions (probably Manutees or large seals) were seen on the beach, with birds innumerable. It was

Geo. site.

found to be about a mile in length from N. to S. the lat. 3° 40′ S. and lon. 54° 44′ E. from London, by account from Seychelles, and in 54° 40′ E. by observations. To the N. W. of

Dangers.

the Mamelles, distant 1½ mile, there are several rocks. About 1½ mile east of the rocks called the Chimnies between the Isles Mahe and Praslin, there are several rocks at the water's edge, on which the French frigate Regeneree was nearly lost; and to the N. E. of the Chimnies about 1½ mile distant, lie several rocks under water.

* The Seychelle Islands belong *now* to Great Britain, and a governor was sent out 2 years ago to reside there.

The S. Western group of the SEYCHELLE ISLANDS, has generally been called Amirante Islands in the old charts; these consist of several detached small Islands, coral reefs, and banks. One of them was examined, in 1771, by the *Eagle cruizer*, and called by her *Eagle Island*. It is a low sandy Island, about 3 miles round, covered with shrubs, and is encompassed with a chain of reefs to the northward and eastward, at the distance of 2 and 3 miles from the shore, on which the sea breaks very high. Between these reefs and the Island, there is a channel, with soundings in it from 9 to 14 fathoms. Eagle Island.

Eagle Island, called by the French Remire, is in lat. 5° 11′ S., lon. supposed to be about 54° 04′ E.: on it there is no fresh water. The tide rises about 9 feet, high water at 3½ hours, on full and change of moon: variation 11° 13′ W. in 1771. This Island is one of the westernmost of the Seychelle Archipelago, and the northernmost of those called Amirante Islands. Geo. site.

AFRICAN ISLANDS,* 2 in number, are very small and low, situated about 6 leagues N.N.E. of the bank which surrounds the Amirante Islands, and were discovered about 1795, by some of the small French vessels which belong to, and navigate in these parts. Captain Adams, of H. M. S. La Sybille, examined them in 1801, and found a few shrubs on them. They are almost overflowed at high water spring tides, and abound with turtle and aquatic birds, but are destitute of fresh water. African Islands.

The largest island is the southernmost, joined to the other by a sand bank, which is dry at low water, spring tides; their length from N. to S. is not above 2 miles. On the east side a reef of breakers environs them, and on the west side there is safe and commodious anchorage in a bay, formed by the extremes of the isles and the reef which joins them. The lat. observed on the southern island was 4° 55′ S. lon. 54° 9½′ E. by stars on each side of moon. Variation 7° 44′ W. The tides rise about 8 feet, high water at 9h. 39m. on full and change of moon. These islands lie about 6 leagues to the N. N. E. of Remire or Eagle Island, and 4 miles N. W. by N., from the latter there is said to be a reef; but there is a safe channel to the south of the African Islands, between them and the others which lie to the southward. The Mary passed through this channel, 17th December, 1694, and afterward steered to the eastward, between the Seychelle Islands and the small isles on the south part of the bank, without perceiving any danger. Geo. site.

The following description of the S. part of the MAHE ARCHIPELAGO, is from M. d'Après. Eighteen leagues and a half N. by W. from Alphonse, the ship, Le Lys, who had discovered it, descried another small island, which was named St. Francis; this island was also seen by a vessel going to the coast of Malabar, in 1744, who had, at less than a mile from its west side, 8 fathoms, coral ground. She saw afterwards a like island to the E. N. E. of this, and found between them 35 fathoms water, the same ground. Having sailed 6 leagues N. E. by E., and being in lat. 5° 59′ S. the same day at noon, she descried a third islet, 3 miles to the west, and had always from 30 to 35 fathoms. The Island St. Francis was seen also in 1756, by the frigate La Gloire, bound to Patté. Southern part of the Mahe Archipelago. St. Francis Island.

M. du Roslan, sent in 1770 from Mauritius, to explore the Mahé Archipelago, found an island, which he named L'Isle Platte, (Flat Island) whose lat. is 5° 51′ S. and lon. 55° 31′ E. of Greenwich; it appeared to be 3 miles round, with a reef at the north part, which projects out about a mile. Flat Island.

* His Majesty's schooner, Spitfire, was wrecked on the reef at the southern part of these Islands, on the morning of 21st August, 1801. Lieutenant Campbell, the commander, with 4 men, left the isles in a small boat 27th, saw Silhouette 29th, reached it the 31st, and got a supply of water and cocoa-nuts; he then left this Island, and reached Mahe Roads 2d September, where he found the Sybille frigate, Captain Adams, who proceeded immediately to the African Islands for the remainder of the Spitfire's crew.

Steering N. W. from Flat Island, he saw another bearing N.-W. by W., which he approached within half a cannon shot, without finding any ground. He sent an officer to search for anchorage, and examined the Island on the following day, which he named L'Isle du BERGER (Shepherd's Island).* It is higher on the north than on the south side, and there is a cut or separation in the middle, which at a distance will make it appear like two Islands. This cut is a bank of hard coral, covered with some white sand, and entirely under water at high tide; but when low water, you may pass along it, from one part of the Island to the other. The ground being very hard coral, with some sand over it, the trees are tall but very spungy; there is also a few cocoa-trees of a small kind, and many birds of various sorts. It is about 2 leagues in circumference, the whole Island being encompassed with a reef that stretches off near a mile, having a channel through which you may enter with a boat. The inside of this reef is full of turtle, sharks, and many other fish. This Island is in lat. 5° 45′ S. and lon. 55° 8′ E. from Greenwich.

Shepherd's Island.

From this place, M. du Roslan, standing to the W. by S. descried a *third Island*, which he called L'Isle de l'Etoile, or STAR ISLAND. It is only a sand bank covered with bushes, and about half a league long. The surrounding reef projects to the southward about a mile, and the soundings are very uneven between this Isle and Shepherd's Island.

Star Island.

At 6 o'clock in the evening a *fourth Island* was seen, which received the name of MARIE LOUISE. It appeared woody, surrounded with a reef, and of the same size as Flat Island. The lat. of this Island was found to be 6° 12′ S. lon. 54° 40′ E. of Greenwich.

Island Marie Louise.

December 14th, the same navigator discovered a *fifth Island*, distant 2 leagues W. S. W. from Marie Louise; within a league of it, he had 9 fathoms water, rocky ground; this was also covered with wood, but appeared smaller than all the others, and was named ISLE DES NEUF, (Isle of the Nine). It lies in lat. 6° 15′ S. lon. 54° 32′ E. from Greenwich. The depth of water between the two Islands is from 25 to 30 fathoms, but in the offing to the southward, you suddenly lose ground.

Isle dés Neuf.

The same day at noon, they saw a *sixth Island*, distant about 10 miles W. by N. from Isle des Neuf, and like that, a mere sand bank, covered with bushes. They named it LA BOUDEUSE.

Isle La Boudeuse.

On the extensive Bank which surrounds the Seychelle Islands, the depths are generally from 14 to 40 or 45 fathoms, but there is less water on some parts of it; particularly at the eastern and western extremities. The Mary had 10 and 11 fathoms on the S. Eastern part of the Bank; and true W. 7° S. from the Island Seychelles 18 leagues, she had 11 fathoms rocky bottom. Some French navigators have asserted, that there are shoal patches on the western verge of the Bank, where a large ship would be liable to strike; but this account cannot be relied on.

COETIVY ISLAND, was discovered July 3d, 1771, by the Chevalier De Coetivy, and is in lat. 7° 14′ S. lon. 56° 32′ E. by the chronometers of the Sir Stephen Lushington in 1811, agreeing nearly with the French accounts. It is low and sandy, destitute of good anchorage, and there is said to be a Bank to the S. W. of it, dangerous for large ships. Capt. Malfie carried on a manufactory of cocoa-nut oil here in 1811. The Lord Eldon, and Carmarthen, saw Coetivy, on the 10th October, 1808, and made it in lat. 7° 19′ S. lon. 56° 20′ E.

Coetivy Island.

BANK ADELAIDE, very little known, by Chevalier Grenier's chart is situated about 15 leagues N. E. from the above Island; and in lat. 6° 9′ S., N. N. W. 6 or 7 leagues from Bank Adelaide, Success Bank is said to lie in lon. supposed 57° 00′ E.

Banks Adelaide and Success.

FORTUNE BANK, was named by Mr. Kerguelen after his vessel. Having left Mauritius, 13th September, 1771, and made a north course corrected from thence, at 1 A. M.

Fortune Bank.

* This Isle and Poivre, are said to be one and the same; but the true situations of these Isles to the South and S. W. of Scychelles are not well determined.

19th, had ground 30 fathoms, next cast only 19 fathoms rocky. He stood on the other tack under a foresail, until the anchor was ready, and shoaled to 17, 15, and 14 fathoms sand, then anchored, being apprehensive of driving upon some *sand bank*. The multitude of sharks about them, made the sea luminous like breakers; of these they caught above 50, and a great quantity of crabs, with which the sea was covered. When day-light appeared, no danger was discernible. On weighing, he let the vessel drive, and continued sounding; for a long time they had 14 fathoms, then 20, 25, and 28; then at once no ground. M. Kerguelen, states it to be in lat. 7° 16′ S., lying N. W. and S. E., but does not mention its extent, which is 3 leagues, according to M. D. Apres.

This Bank was discovered 31st May, 1770, by the Vereist, Captain Compton. He was on the 30th in lat. observed 7° 24′ S., and supposes they were then on the bank, but did not sound till about ¼ before 1 P. M. when he had 15 fathoms coral rock, then 14 fathoms several casts. The weather was fine and clear, could see no appearance of shoal water or breakers from the mast-head; the water was very smooth. Steered N. E. ½ E., going about 4 knots, and had shoaled to 12 fathoms by a ¼ past 1 P. M.; continued that depth till 2 P. M., then deepened to 14 fathoms a few casts, and shoaled again to 12 fathoms. From ½ past 2 to 3 P. M. had 11 fathoms very regular; from 3 to ½ past 3 P. M. had 10½ fathoms very regular, then as fast as the line could be passed along, no ground at 20, 50, and 100 fathoms. Though the N. E. edge be steep, it is supposed the S. W. part shoalens gradually, as some of the people had observed the water discoloured, as early as 10 A. M. the preceding day.

They found the N.E. end of the Bank to be in lat. 7° 11′ S. and 7° 54′ E. from St. Mary's, or 58° 22′ E. from Greenwich by account.

Immediately after losing soundings, the sea regained its proper colour, with the usual swell. Numbers of ground sharks were seen during the time they were on the bank.

The *Surat Castle*, on her passage from Mauritius to Madras, crossed over this bank, 22d February, 1789. The first cast of the lead was 15 fathoms irregular, and in running over the bank from 15 to 10 fathoms, the least water, coral rocks and coloured shells.

The appearance of breakers was seen on the western edge, with strong ripplings round it. The lon. of Fortune Bank, by lunar observations taken in this ship, was found to be only 57° 38′ E.

The Sir Stephen Lushington in Jan. 1811, after passing the Island Coetivy, next day got upon Fortune Bank, and carried soundings of from 10 to 12 fathoms steering east 7 miles, the coral rock and sand plainly visible under the ship, and as far as could be seen from the mast-head to the northward and southward. At noon had 38 fathoms, and soon after no ground; by observations taken on this Bank, it was found to be in lat. 7° 7′ S. lon. 57° 4′ E. Geo. site. or 31 miles east of the Island Coetivy by chronometers.

About 45 leagues N. N. Eastward from Fortune Bank, in lat. about 5° 12′ S. there is another Bank according to the French, with soundings on it from 13 to 31 fathoms.

ISLAND PRINCE GEORGE, placed in lat. 7° 10′ S. lon. 60° 50′ E., is small, supposed to have been seen in the Prince George and Mary, 1755; but it seems doubtful, whether an Island exists near this situation. In lat. 6° S. about 30 leagues to the N. Westward of this doubtful Island, NORTH ROQUEPEZ is thought to lie, in lon. about 60° E. Doubtful Islands.

A sandy Isle, with breakers extending about 3 miles from it, said to have been seen in the Bridgewater at 10 A. M. the 6th Dec. 1812, then distant 6 or 7 miles, and situated in lat. 6° 27′ S. lon. 60° 4′ E. (its southern extremity) may perhaps be the *doubtful* Island North Roquepez. South Roquepez, is known not to exist. Dangerous Sandy Isle.

SWIFT'S BANK, from the journal of the vessel of this name, who passed over it going from Mauritius to Ceylon, in 1744, Mr. Dalrymple places from lat. 5° 17′ to 4° 35′ S. lon. 61° 5′ to 61° 30′ E. The soundings found on it were from 18 to 35 fathoms. Swift's Bank.

Rose Galley Rocks.

ROSE GALLEY ROCKS, are said to be a ledge of rocks and breakers, seen by Capt. Gentleman, in the vessel of this name, going from Madras to Bombay in 1746; since which time, they appear never to have been seen, rendering their existence doubtful. This danger is said to be in lat. 5° 30′ S., and thought to be nearly on the meridian of the N. E. end of the Swift's Bank, or about 61° 33′ E. The run from Madras, places the Rose Galley Rocks in lon. about 61° 52′ E.

Space of clear sea between the Mahe and Chagos Archipelagos.

This *danger*, said to have been seen in the Rose Galley, is thought to be the most easterly of those in the vicinity of the Mahe Archipelago, between which and the western limit of the Chagos Archipelago, there is a space of above 8° in longitude, where the sea is considered free from shoals or islands; which is frequented by ships going the Southern Passage, and was formerly used by ships in early times, proceeding from Bombay to England. This route is now seldom frequented by homeward-bound ships, although it appears eligible when the Northerly and N. W. winds may be expected between the equator and Mauritius, in December and January: it is then, probably, the most expedient and direct passage from Bombay.

Which route may be adopted at times.

In 1796, the London proceeded by this passage. January 29th, she was in lat. 3° N. lon. 67½° E., got the winds then at W. and S. Westward, afterward at N. W., until in lat. 1° S. lon. 68° E. on the 2d February. From hence, brisk winds between W. S. W. and W. N. W. continued till in lat. 12° S. lon. 75° E. on the 7th, then veered to N., where they kept till she reached lat. 21° S. lon. 75° E. on the 10th; had then light N. W. winds one day, and got the trade at S. S. E. on the 12th, in lat. 22° S. In 23° S. it veered to E. S. E. In 24½° S. lon. 62° E. had strong N. N. W. gales two days, then S. W. and Southerly winds three days more. On the 21st February, in lat. 25½ S. lon. 59° E. had a return of S. Easterly winds.

# *CHAGOS ARCHIPELAGO.*

## WITH SAILING DIRECTIONS.

General remarks relative to the Chagos Archipelago.

CHAGOS ISLANDS AND BANKS, were very imperfectly known, until Capt. Archibald Blair, then a Lieutenant of the Bombay Marine, surveyed them in 1786. They formerly had the general name of Basses de Chagos, from the largest Island which forms the southern limit of the whole, called Chagos Island, or Diego Garcia. These were formerly placed on the charts as separate Islands, and Diego Garcia generally laid down about 2½° to the westward of Chagos, but it is now well ascertained, they are one and the same Island.*

Geo. site of Diego Garcia.

The extent of the Chagos Islands and Banks, is from the south end of Diego Garcia, in lat. 7° 29′ S. to the north end of Speaker's Bank, in lat. about 4° 40′ S., which is thought to be 4 or 5 leagues to the eastward of the meridian of the former, the Islands between them forming a large curve to the westward.

DIEGO GARCIA, OR CHAGOS ISLAND, extends from lat. 7° 14′ S. to 7° 29′ S. The longitude by mean of 2 immersions of the 1st satellite of Jupiter, taken by Captain Blair on Flagstaff Point, in the harbour, was 72° 22′ E. This Island is one of the wonderful phenomena of our globe. Its length from north to south is about 14 or 15 miles, and the general breadth from 3 to 4 miles, having the form of a crescent, with the convex side to the eastward. But it may be considered as a steep coral wall standing in the ocean, for the whole interior of the Island is a lagoon or natural harbour, nearly of the same length and

* Ady and Candy, and the London's Bank, have no *real* existence.

breadth as the Island itself, for there is no part of the circumjacent wall above ½ a mile broad, and the greater part of the eastern side is only about $\frac{1}{10}$ of a mile in breadth. This Island, (or contour of an island) is low, generally 8 or 10 feet elevated above the sea at high tides, but inundations of the sea appear to have pervaded the wall in some places, and imparted their waters to those in the harbour. Although low, the Island is covered with tall cocoa-trees, which make it visible 5½ or 6 leagues at sea. A steep coral reef fronts the sea all round, on which it breaks very high, and renders the landing on the exterior impracticable. This reef is steep to, in most places, there being no anchorage for a ship on the outside of the Island, except in the entrance of the harbour at the N. W. end. The points which form the entrance, are called by Captain Blair, the east and west points; between them 3 Islands are situated, called East, Middle, and West Islands; this lies near the west point of the main Island, and the 2 former nearest the east point.

Environed by a reef.

Entrance of the harbour described.

West Point and Island, are joined by a reef dry at low water, and Middle and East Islands, are situated on the edge of an extensive coral bank, which projects from them about 2 miles to the southward into the harbour; several parts of it are dry at low water, with dangerous patches of 1½ and 2 fathoms coral in other places. The same coral bank extends to the east point, which renders the passage between it and either of these Islands unsafe, except for very small vessels. It appears, however, that M. la Fontaine went into the harbour in 1770, betwixt East Island and East Point, where 4½ fathoms is marked on his plan of the Island Diego Garcia; but Captain Blair in 1786, found only 2 and 2¼ fathoms in the same place; and the ship Hampshire, of Bombay, was wrecked (about 1793) in attempting to enter by this dangerous and shoal passage.

The only safe channel into the harbour, is between West Island and the sand projecting from Middle Island above ½ a mile to the S. W., leaving a channel near a mile wide between it and West Island, which is safe to approach near, on the N. W. and N. E. sides. There are no soundings until a ship is close to the entrance, the water then shoals suddenly, from 100 fathoms no ground, to 20, 10, and 7 fathoms.

The French used to keep a small settlement on this Island, consisting of slaves and a few Europeans, who prepared cocoa-nut oil and salt fish, for small vessels which came annually from Mauritius.

A variety of fish abound in the harbour, and excellent green turtle visit the shores on the outside of the Island; the land crabs, which feed on the cocoa-nuts as they fall from the trees, are also wholesome food; and good fresh water may be had in almost every part of the Island, by digging eight or ten feet deep.

Productions, &c.

The S. E. winds prevail here from April to November, but are strongest in June, July, August, and part of September, during which time the current generally sets between W. and N. W., from 12 to 20 miles daily. In March and April the winds are often very variable and light; October and November are also changeable months, but more unsettled, and more squally than the former. In December and January, the N. W. winds prevail almost constant, producing a current to the S. Eastward. A ship proceeding by the southern passage, and desirous of getting a sight of Diego Garcia, should keep in lat. about 7° 30′ S. to 7° 35′ S. when approaching its meridian, and pass to the southward of the Island if the wind is favorable. Should she intend to stop here for a supply of water, or other refreshments requisite for a scorbutic crew, she ought to steer for the N. E. part of the Island, keeping in the parallel of 7° 18′ S. When the S. E. winds blow strong with hard squalls, much rain, and cloudy weather, in July, August, and part of September, she must guard against the currents setting generally to the N. Westward, as she might be carried to the northward of the Island, if observations were not obtained.

Periodical winds and currents.

Instructions for sailing toward the Island.

As the shore is free from projecting shoals, she may in the day, run for it without danger, if the weather is not so thick as to prevent land from being seen at the distance of 2 or 3 miles. The Island being low, and sometimes enveloped by a cloud in the night, great cau-

tion is requisite in running for it at such times, and it should not be approached in a dark night.*

To approach it with the S. E. monsoon,

Running for it in a clear night, or in the day with thick weather, when near its situation a ship should be kept under such sail as she can bear on a wind; and if the Island is seen, her head ought immediately to be laid to the N. Eastward off shore, if it is night; and it may be prudent to ply to windward till morning, to prevent being carried to leeward by the current. In the day, she should steer along by the N. E. point boldly, passing close on the north side of East and Middle Islands, and round the spit that extends near a mile to the westward of the latter, as close as consistent with safety, to enable her to fetch the higher up the

and sail into the harbour.

harbour. In clear weather, the dangers are always visible from the mast-head; an officer stationed there to look out is the safest guide. Care must be taken in working up, not to stand farther westward than to bring West Island North, that the shoals in the bight to the southward of this Island may be avoided; nor too much to the eastward, that the extensive bank and shoals to the southward of Middle Island may also be avoided.

Proper anchoring birth.

Entering the channel during S. E. winds, it is proper to keep near to the sand projecting from Middle Island to the westward, which has $5\frac{1}{2}$ and 6 fathoms close to its western point: By keeping this close a-board, a ship may fetch into good anchoring ground without tacking, with West Island bearing N. $\frac{1}{2}$ W.; but attention is requisite, not to stand to the westward of the meridian of this Island, on account of the shoal in the bight.

This part of the harbour to the southward of the entrance, is the safest when the N. Westers blow, and equally secure with any other part in the south-easters. Its vicinity to the sea, and the facility with which ships may be brought in or carried out, make it preferable to any other part of this capacious harbour; and if necessary, ships may be warped between the shoal patches, within 500 yards of the shore.

The anchorage at this part is generally sandy clay, with bits of coral in some places, and there is good water found in digging on this N. W. part of the Island, abreast the anchorage.

Description of the harbour, &c.

In the channels between the coral banks, which are interspersed through the harbour of Diego Garcia, the bottom is generally fine white sand, mixed in many places with coral, which makes it prudent to have good ground service on the cables, and it is advisable for a ship intending to visit this harbour, to have a few fathoms of chain to one of her anchors, in case of being obliged to anchor among rocks. About half-way up the harbour, it is contracted by a large flat projecting from the western shore, and several coral patches in the channel make it in this part intricate for large ships, should they be inclined to proceed so high up. To the southward of this intricate channel, on the east side of the harbour, there is good anchorage beyond the point that projects from the eastern shore.

In the upper part of the harbour, the depths are from 5 to 10 and 11 fathoms, and between the entrance and middle part of it, from 7 or 8, to 16 or 18 fathoms, except near the shores, or on the coral patches or flats; the depths on these, are from 1 to 3 fathoms.

Should a ship be obliged to anchor at the entrance of the harbour, on the outside, it should be with the channel open, for the wind has been known at times in the S. E. monsoon, to veer to the N. W., and blow from this quarter, a short time, in squalls.

* The Atlas was wrecked on the S. E. side of the Island, about half an hour before day-light, May 30th, 1786, in which vessel I was at the time. The Charts on board were very erroneous in the delineation of the Chagos Islands and Banks; and the commander trusting too much to dead reckoning, was steering with confidence to make Ady or Candy (which do not exist) for a new departure, being in their longitude nearly by account, and bound to Ceylon; but, unfortunately, a cloud over Diego Garcia prevented the helmsman from discerning it (the officer of the watch being asleep) till we were on the reef close to the shore; the masts, rudder, and every thing above deck, went with the first surge; the second lifted the vessel over the outer rocks, and threw her in toward the beach, it being high water, and the vessel in ballast; otherwise, she must have been dashed in pieces by two or three surfs on the outer part of the reef, and every person on board have perished. We had been set 4° to the westward of account, in the passage from Bencoolen of 20 days.

From October to February, when westerly and northerly winds may be generally expected, a ship from Bombay intending to stop at this Island, should pass to the westward of the Maldivas and Chagos Banks, and steer eastward for it, keeping in its parallel.

At Diego Garcia, it is high water on the full and change of moon at 1 H. 30 minutes, and rises 6 or 7 feet. The variation was 2° 16′ W. in 1786. An earthquake in 1812, is said to have torn asunder one of the small isles at the entrance of the harbour.

A CORAL BANK, in lat. 6° 40′ S., about 14 leagues N. Westward from Diego Garcia, is thought to be the nearest to this Island. Captain Blair in crossing over it, had soundings from 9½ to 30 fathoms. Coral Bank N. W. of Deigo Garcia.

PITT'S BANK,* is situated directly west from the Island, the eastern verge of which, is about 16 or 17 leagues distant from it, and the western edge about 5 leagues farther. The south end of this bank, is thought to be nearly in the latitude of the south end of Diego Garcia, and its north end in lat. about 6° 50′ S. In crossing the north part of this bank the depths were from 9 to 18 fathoms, and the least water found near the south part of it was 7½, but there may be less, as it was not surveyed, and the bottom being coral and sand. Pitt's Bank.

It lies directly south from the Six Islands, Danger Island, and Eagle Islands, which are the most westerly in this Archipelago; and it was considered the most southerly and western-most bank of the whole, its western limit being about 66 miles distant from Diego Garcia, but the following Banks have recently been discovered more to the westward.

CENTURION'S BANK, was discovered by the squadron under Admiral Rainier, proceeding to Bombay by the southern passage. Captain P. Heywood, of the Dedaigneuse Frigate, gives the following extract from his journal, relative to this new discovery.

"H. M. S. La Dednaigneuse, 1803, September 27th, at noon H. M. S. Centurion bearing S. ½ W. a small distance from us, made the signal for soundings 17 fathoms, and soon after for 25 fathoms. My observed lat. was then 7° 39′ S. lon. by observation of ☉ ☾ 70° 52′ E. and by chronometer 70° 53′ E.; and the course made from the south point of Diego Garcia W. 7° S. distant 99 miles. I hove the lead immediately, but had no ground at 100 fathoms." Centurion's Bank. Geo. site.

Nearly in the same place, the frigate Bombay had soundings, in proceeding by the southern passage with some merchant ships. Captain Hayes, of the frigate, states, that on discerning the rocks alongside, the lead was passed forward and hove, and the depth was found to be 21 fathoms. He thinks when the rocks were first seen, that the depth was not more than 7 or 8 fathoms over them, for the ship had deepened the water greatly before the lead could be hove.

OWEN'S BANK, situated to the westward of Diego Garcia, and considerably to the westward of the Pitt's Bank, and to the N. W. of the Centurion's Bank, was discovered 20th November, 1811, by Captain W. Owen, when giving convoy to some transports from Batavia towards Bombay. Owen's Bank.

He accidentally saw the bottom, and carried soundings of 19 and 20 fathoms for ½ an hour on the Bank, although the other ships had no soundings. He made the lat. at the time 6° 46½′ S. lon. 70° 12′ E. by chronometer, from Diego Garcia in 3 days, and he observes, that the Bank may be of considerable extent, as they probably were on it some time before it was perceived.

As neither of these newly discovered banks, nor the Pitt's Bank, have been explored, it is impossible to say if any part of them may be dangerous, or if there may not be several de- How to avoid these Banks.

* The Pitt passed over it in 1763.

tached patches of coral banks, which form this S. W. limit of the Chagos Archipelago; it therefore seems prudent to avoid them. To effect this, a large ship proceeding by the southern passage, after getting a sight of Diego Garcia, or passing the meridian of this Island, should get into the parallel of 8° S. lat., and not decrease this lat. till she has made 2° of lon. west from Diego Garcia, being then to the westward of all the banks in this Archipelago, she may edge away to the N. Westward as judged most expedient.

The Six Islands.

SIX ISLANDS, OR EGMONT ISLANDS,* are the nearest to Diego Garcia, bearing from it N. 55° W., distant 68 miles. They are all very low, covered with wood; 3 only abound with cocoa-nuts. The 4 southernmost extend to W. N. W., the other 2 to N. E.. They are connected by shoals which appear fordable, and a small harbour seems to be formed on the N. E. side of them, by reefs and breakers which project from the 2 extreme Islands; but it is difficult of access, and dangerous within, from the proximity of numerous shoals. There is no safe anchorage near these Islands, the soundings extending so little without the breakers. To the S. W. a small coral bank extends about ½ a mile off.

About 4 or 5 leagues southward from the Six Islands, the north end of the Pitt's Bank is supposed to be situated, which has already been described, and is thought not to be dangerous.

Geo. site.

The Six Islands are in length about 6 miles N. W. and S. E., and are in lat. 6° 37′ S. lon. about 71° 24′ E.

Danger Island,

DANGER ISLAND, in lat. 6° 21′ S. about 16 miles distant from the Six Islands, bearing from them N. N. W., is covered with wood, and a few cocoa-nut trees near the centre: it is small, with a reef projecting from it 3 or 4 miles to the southward, and a coral

and a Coral Bank.

bank to the E. and S. Eastward of the reef. Nearly north from the northernmost of the Six Islands, and S. Eastward from Danger Island, about equal distance from both, there is a coral bank with 7 fathoms water on it.

Eagle Islands.

EAGLE ISLANDS, bear from Danger Island N. 25° E. distant 11 miles; the southernmost is an inconsiderable spot covered with bushes; the other in lat. about 6° 10′ S. is about 2 miles in length, covered with cocoa-nut trees, and others common to these Islands. No soundings obtained except very close to it on the west side; but to the eastward, there is 9 or 10 fathoms about a mile east from the small Island.

Three Brothers.

THREE BROTHERS, in lat. 6° 09′ S. bear from Eagle Islands about E. by N., distant 12 miles. They are small, connected by shoals, and by a fourth island, having small bushes on it, which cannot be seen unless very close in. Two of these Islands abound with cocoa-nut trees.

The Calcutta passed to the southward of the Three Brothers, and between Danger Island and Eagle Island; she had 5, 6, and 7 fathoms in this channel, and due east from it carried soundings from 8 to 40 fathoms, to the distance of 10 or 12 leagues. About 20 leagues to the E. S. Eastward of the Brothers, this ship first got on the bank, and shortly after had 4½ fathoms coral, in lat. about 6° 40′ S.; from hence she steered in a direct line for the Three

Extensive bank eastward of these islands.

Brothers, until they were seen, in various depths from 6 to 38 fathoms on this extensive bank.

In lat. about 5° 53′ S., and N. by E. from the Three Brothers, distance about 5 leagues, there is a steep coral bank, on which Captain Blair found 4½, 5, and 6 fathoms.

Peros Banhos Islands.

PEROS BANHOS ISLANDS, are the largest group in the Chagos Archipelago, being 5 leagues in length at the western part, extending from lat. 5° 16′ to 5° 31′ S., and the

* These Islands were seen by M. de Surville in 1756, by the Egmont in 1760, by M. du Roslan in 1771, and by the Eagle in 1772, by the Rumbold in 1773, by the Drake 1774, and were surveyed by Captain Blair in 1786.

breadth about 4 leagues east and west at the north part. This circular group is composed of several chains of islands and banks, having channels between them; one of these, divides the western part of the group nearly in the middle, through which the French vessel, Elizabeth, passed in 1744. Between the N. W. and N. chains, there is an opening about 2 miles wide. The N. W. chain consists of 7 islands and several dry sands, connected by very shoal water, and bears the appearance of becoming one island. The northern chain consists of 8 islands, with several dry sands and rocks, having a channel with 10 fathoms water in it at the N. E. part of the group; but within, it is full of dangerous shoals.

From the N. E. angle, several dry sand banks and breakers extend S. 4 miles; an apparent channel is formed between these, and a detached island more to the southward. There is another channel on the east side of the S. W. chain, at the south part of the group, between which and the S. Easternmost Island, there seems to be an extensive bank.

An eclipse of Jupiter's 2d satellite, taken by Captain Blair, on the island next to that which forms the N. E. angle, made it in lon. 72° 3′ 30″ E. The north part of these Islands, Peros Banhos, are those called Bourde Islands in M. d'Après charts.

SALOMON ISLANDS,* in lat. 5° 23′ S. are a circular group, extending N. E. and S. W. near 5 miles, and about 3 miles in breadth. They are 11 in number, the southern parts joined by rocks and sands with breakers; the other islands are also connected by reefs, except at the N. W. part, there is a channel leading into a large harbour, formed by these Islands. The centre of the group bears E. 18° S. from the N. E. Islands of Peros Banhos, distant 17 miles. At the entrance of the harbour there is a bar, on which Captain Blair found 3 fathoms, and judged that there may be about 4 fathoms on it at high water, spring tides. When over the bar, regular soundings from 10 to 18 fathoms coral, and some spots of sand, were found in working up the harbour; and several shoals seen, on which there appeared little water. He anchored in 13 fathoms sandy clay, near the S. E. Island, the entrance of the harbour bearing N. N. W. distant about 2 miles. Salomon Island. Anchorage, &c.

From November 21st to the 25th, he remained here, taking in wood and water. The well was dug 5 feet deep, about 30 fathoms from high water mark, in a copse of cocoa-nut trees on S. E. Island; the water was perfectly clear, well tasted, and in abundance. They caught 20 turtle, and a sufficient supply of fish, but the latter were not so plentiful as at Diego Garcia, probably occasioned by the great number of seals.

"If a judgment may be formed from the soil and productions, these Islands" Captain Blair remarks, "may be supposed much older than any we have visited; the soil is tolerable, and much deeper than at Diego Garcia, or Peros Banhos; consequently, the trees take much deeper root, and grow to a greater size. One sort peculiar to these Islands, which appears to be very good timber, grows to the height of 130 feet, many very straight, some 4 feet diameter, and 40 feet from the ground to the branches. The young timber is white, but the old decayed trees are of a deep chocolate colour, and the timber perfectly sound. The harbour is very secure, but the bar at the entrance, on which there is not more than 4 fathoms at high water, spring tides, makes it impossible for large ships to anchor. There are a number of shoals within, which may be easily avoided by keeping a good look-out from the mast head, as the clearness of the water makes them easily distinguished." Harbour secure, but has a bar at the entrance.

The articles with which these Islands abound, are cocoa-nuts and the timber mentioned; a small quantity of tortoise-shells may sometimes be procured. The tide rises 6 feet, and it is high water at 1h. on full and change of moon.

SANDY ISLANDS, in lat. 5° 17′ S. are distant about 6 leagues from Salomon Islands, to E. N. Eastward. These are 3 low sandy islands, connected by rocks and breakers, Sandy Islands.

* From the French ship Salomon, Captain Bourde, who saw them in 1776. They are called by Captain Blair, Governor Boddam's Islands, which name Mr. Dalrymple appropriates to the harbour, and not to the islands.

seen by the Griffin, in 1749, and by other ships; also by Captain Blair, in his survey of the Chagos Archipelago, in 1786.

Speaker's Bank.

SPEAKER'S BANK, takes its name from the ship Speaker, Captain James Dewar, who sailed over great part of it in 1763, although the Griffin had previously been upon it in 1749.

To the south part of the bank, the latter vessel steered north from Sandy Islands, after passing on the west side of the latter; from which, and Captain Blair's run, the south end of Speaker's Bank appears to bear N. by W. from the Sandy Islands, distant 6 leagues, and is in lat. about 5° S., very little to the eastward of the meridian of Diego Garcia, or in lon. 72° 26′ E. At this part, it is 5 or 6 miles in breadth, extending in a direction about N. by E. 20 miles distance, the northern extremity being in lat. 4° 40′ S. and not more than half the breadth that it is at the southern part.

Geo. site.

This bank consists mostly of coral rock, and the bottom may be seen in 14 or 15 fathoms when the weather is clear. The depths on it are from 5 to 27 fathoms, irregular soundings, as experienced by the Speaker, which ship passed from the north part to the southward, and anchored on it November 11th, 1763, in lat. 4° 52′ S. during the night. On the following morning the boats were sent to sound, one to the northward and one to the southward, and found several patches of 6 and 7 fathoms. The eastern part of the bank seemed more shoal than any other, although no appearance of breakers were discernible; the commander and officers of the Speaker, therefore supposed, the depths on it much the same as they had passed over.

Probably some parts of it unsafe for large ships.

This bank is not considered dangerous for small vessels, but it would be imprudent for a large ship to make too free with it, particularly when there is much swell, as it is known that some of the patches have scarcely 5 fathoms on them, and it is probable there may be less. Speaker's Bank, is the northern limit of those banks and islands which form the Chagos Archipelago; the south-west extremity of it and Chagos Island (or Diego Garcia) are on the same meridian. Between them, in the concave space formed by the islands to the westward, there is an extensive bank, or rather several banks, with deep gaps between them, some of which have been noticed already. The general depths on them are from 12 to 30 or 40 fathoms, but on some of the patches not more than 4½, 5, and 6 fathoms; on which account, these islands and banks are generally avoided by large ships. They have been long known by the name of Basses de Chagos, the exterior limits of which, were until lately, imperfectly known.

# *INSTRUCTIONS for the CHANNEL of MOZAMBIQUE, and for ST. AUGUSTINE'S BAY.*

## SOUTH AND WEST COAST OF MADAGASCAR; ISLANDS, SHOALS, WINDS, AND CURRENTS.

Mozambique Channel

MOZAMBIQUE CHANNEL OR INNER PASSAGE, formed between the Coast of Africa and the Island of Madagascar, is in the narrowest part nearly opposite the town of Mozambique, about 71 leagues wide, but much broader at the southern part, opposite to Cape Corientes.

THE SOUTH-WEST MONSOON, which is the fair season in the Mozambique channel, begins in April and continues till November; the N. E. monsoon then commences, and prevails until April. Periodical winds and currents.

During the S. W. monsoon, the winds vary from S. W. to S. E. and E. S E., particularly near the south end of Madagascar, they blow often from S. E. and Eastward, brisk and moderate breezes; close to the African Coast, land breezes are frequent. In mid-channel, they are more steady, generally blowing right through, when the distance is equal from either shore. But there are exceptions to this general observation, for in the southern part of the channel, light variable winds, and westerly currents, have sometimes retarded ships bound to India by this channel.

From lat. 24° or 25° S. to 15° or 16° S. light variable winds from the E. and N. E. with westerly currents, have sometimes been experienced during the S. W. monsoon; this happened to the Sir Edward Hughes, in July, 1802, although at such times, Southerly and S. E. winds may be generally expected.

On the west coast of Madagascar, the current at times sets to the northward during the S. W. monsoon; and on the African Coast, generally to the southward. It is often changeable about mid-channel. Among the Comoro Islands, and between Cape Ambre and the coast of Querimba, it sets westerly all the year round.

THE N. E. MONSOON, commences early in November, at the northern part of the Mozambique Channel, but toward St. Augustin's Bay, not till the end of this month, and seldom extends farther south, the prevailing winds between Cape Corientes and the S. W. part of Madagascar being southerly, varying from S. E. to S. W. during both monsoons.

In the Mozambique Channel, squalls from W. to N. N. W. may at times happen during the S. W. monsoon, but never continue long. It is chiefly during the N. E. monsoon that storms arise, when the S. E. and S. W. winds, which prevail without, are blowing strong; these winds blow into the channel, and are resisted by the N. E. and N. W. winds, which produce a high turbulent sea, and sometimes whirlwinds, by their opposing force. At such times, the sky is overclouded, and the rain heavy. In the N. E. monsoon storms may at times be expected

CURRENTS in the Mozambique Channel, during the N. E. monsoon, generally set to the southward along the African Coast, and also in the offing, from 18 to 28 miles daily; but on the coast of Madagascar, they run to the northward. On the African side, they set southerly most of the year, though they are liable to change in both monsoons, when the weather is precarious, and set to the northward for a short time.

The route by the Mozambique Channel, is more direct than any other, for ships bound to Bombay, Ceylon, or the Coromandel Coast, when the S. W. monsoon prevails on those coasts; for it predominates in the Mozambique Channel at the same time. This route is generally preferred in times of peace: but in war, many navigators have adopted the passage to the east of Madagascar, where they are not so liable to light winds, nor to fall in with shoals, as if they proceeded by the inner passage. The passage outside of Madagascar, although the distance is greater, may, by these advantages, be made as quickly as the other; and some instances have occurred, of ships separating to the eastward of the Cape, part of them adopting the Inner Passage, the others the Passage east of Madagascar, and the latter were the first that arrived at Bombay. The Mozambique Channel, the most direct route for ships bound to India in the S. W. monsoon,

The *true* position of the dangers in the Mozambique Channel, being now pretty well known, this route is much safer than formerly, since marine chronometers have become general. Before the use of lunar observations and chronometers, ships running for the Mozambique Channel were liable to great errors in their longitude after leaving the Cape, or the Cape Bank, occasioned by the strong S. W. and Westerly currents. Many ships, after shaping a course for the middle of the channel, have fallen in with the African Coast. The Doddington, in 1756, steering in the night E. N. E. by compass, struck a little to the east- but unsafe when ships were navigated by dead reckoning.

ward of Algoa Bay, and most of the crew perished.* The Grosvenor, bound home, was wrecked farther to the N. Eastward, 4th August, 1782; the crew and passengers, after reaching the shore, and suffering great hardships, were thought to have fallen a sacrifice to the natives, but a few of them reached the Cape. Since that time, other ships have been wrecked on this coast, occasioned by errors in their reckoning, from westerly currents.

on account of the strength and uncertainty of currents.

Although the current generally sets to the W. and S. W. between the south end of Madagascar and Cape Aguilhas Bank, it sometimes sets to the S. Eastward between Cape Corientes and the Island Madagascar with considerable velocity, which produces a contrary error in the reckoning.

The Prince of Wales and Britannia, in company, in 1762, fell in with the land about midnight, near St. Augustine's Bay, when they supposed themselves near mid-channel.

The St. Jean Baptiste, French Indiaman, was lost on the Star Bank in 1777, on account of the ship being to the eastward of her reckoning, and 39 only, of 120 people, were saved; these survivors reached St. Augustin's Bay in the boat, and on landing were made slaves by the natives; 19 only of the 39, survived their captivity, in which they remained 7 months, and then were ransomed by a Dutch ship.

Caution requisite when steering for the Mozambique Channel.

The French ship, Notre Dame du Mont Carmel, in 1785, made the Star Bank, having experienced an easterly set of 4° from soundings on the Cape Bank.

These examples of errors in the reckoning, both to the east and westward, evince the propriety of caution in running for the Mozambique Channel, when ships are navigated by dead reckoning, or when not confident of the longitude being correct.

How to proceed towards it.

Ships bound to the Mozambique channel, to guard against the S. W. and Westerly currents, which may be expected after passing the Cape Bank, should not edge away too soon to the northward, particularly if it is intended to see the Coast of Madagascar to the southward of St. Augustin's Bay, or to stop there for refreshments. At most times, it will be proper to reach lon. 37° E. before crossing the parallel of 34° or 35° S. or shaping a direct course for the channel.

It was the practice of most navigators to get a sight of Madagascar, near St. Augustin's Bay, and then to steer a course along this side of the channel, to get soundings on the Pracel (or Precella) Bank, on which are several dangers, and the soundings mostly coral rock; and there are other dangerous spots in several places near this shore: it therefore, appears, that the track near mid-channel is preferable when the longitude can be relied on, for here, the winds are more steady, and no dangers except the Island Bassas de India and Europa Rocks, the parallels of which, must be crossed with great caution, particularly during the night. These may be passed to the westward, or to the eastward if necessary, and when to the northward of them, a course should be steered to pass to the westward of the Island John de Nova, direct for Mohilla, or Comoro.

Mid-channel is the most expeditious, and safest route,

although seldom frequented.

Although the mid-channel track is seldom frequented, from a dread of the Bassas de India and Europa Rocks, it appears, however, preferable to the common route along the Madagascar shore, when the navigator is confident of his longitude being correct; for many ships have been in great danger, by falling in unexpectedly with straggling islets or reefs near the Coast of Madagascar. With a steady wind at S. or S. S. W. the track to the westward of the Bassas de India and Europa Rocks seems preferable to that along the Coast of Madagascar, it being clear of dangers. Should a ship approach the African coast, she may be subject to light winds and southerly currents: but in mid-channel, the monsoon is generally strong, and more steady, than on either side of it; although in April, and early in May, the best winds will be found, by steering up to the west of Comoro, rather to the westward of the mid-channel track.

* By the dead reckoning, this ship was near 6° to the eastward of the place where she unfortunately struck, and went to pieces in 20 minutes.

CAPE ST. MARY, the south extremity of Madagascar, is situated in lat. about 25° 40′ S. lon. 45° 16′ E., from whence this Island extends in a N. N. E. direction to Cape Ambre, its north extremity. The Coast from Cape St. Mary eastward to Fort Dauphin, is mostly bold, with soundings near it. Geo. site of Cape St. Mary.

It appears still doubtful whether or not a bank is situated near Cape St. Mary, at the south end of Madagascar. It is said, that the ship Barker saw breakers 4 or 5 leagues to the southward of this Cape, in 1780, and that the channel between them and the Cape is clear, with 20 fathoms water. It is certain, that the extensive bank projected to the southward of Cape St. Mary, on the *ancient* charts, has no existence; and, probably, ripplings were mistaken for breakers by the Barker. Ships, however, which have occasion to pass near Cape St. Mary, should be on their guard, in case of any *real* danger to the southward of it having existence. Doubtful bank near Cape St. Mary.

STAR BANK, is distant from Cape St. Mary about 60 miles, bearing nearly W. N. W.; there are soundings between them from 20 to 40 fathoms several leagues from the shore, but this part of the coast should not be approached in the night, because the Star Bank is very dangerous. From the best accounts, this bank extends from lat. 25° 7′ S., to 25° 25′ S., and is in lon. about 44° 16′ E. distant at least 5 leagues from the land. H. M. S. Intrepid, at the distance of 3 miles from it, had no ground 150 fathoms; her noon observation was 25° 30′ S. the outer part of the shoal bearing E. N. E. ½ E. by compass, about 7 miles distance, the land then in sight from the mast-head. This shoal is steep to, on the west side, but between it and the coast of Madagascar there are soundings in a channel near 3 leagues wide, through which several French ships have passed, and it is said to be safe, if a ship keep in mid-channel. Star Bank, and geo. site,

To the N. W. of the Star Bank, in lat. about 24° 55′ S. two small islands lie near the coast, surrounded by rocks and breakers.

Ships intending to touch at St. Augustin's Bay, or to make the land to the southward, should not approach the coast to the south of lat. 24° 30′ S., as that part of it in the vicinity of the Star Bank, is little frequented. From the latitude now mentioned, to St. Augustin's Bay, the direction of the coast is generally about N. by W. (true bearing) having a reef fronting the sea, at the distance of 2 or 3 miles from the shore, upon which the sea breaks in most places. The land hereabout, is of middling height near the sea; inland, the S. W. part of Madagascar is high. And S. W. part of Madagascar.

SANDY ISLAND, at the entrance of St. Augustin's Bay, is situated about 2 miles from the southern shore, in lat. 23° 39′ S. lon. 44° 00′ E. from the best accounts* I have seen. It is a small low island, with shrubs on it, and a white sandy beach. Geo. site of Sandy Island.

A ship coming from the southward, bound to St. Augustin's Bay, should steer along shore at 2 leagues distance; when it is approached near, the high land about it will be seen, which near the sea is of middling height, but much higher at some distance inland, and a table hill, called Westminster Hall, will be discerned on the north side of the bay, which is situated at a considerable distance in the country. To sail towards it and St. Augustin's Bay.

When Sandy Island is perceived, a course must be steered to pass it on the north side; a ledge of rocks projects from it a large half mile to the N. W. and to a small distance it is encompassed by foul ground, which is steep on the west side, but a bank of soundings extends about 1½ or 2 miles to the N. E. of the island. A ship may borrow on this bank to 12 or 13 fathoms in passing Sandy Island, to avoid the shoals on the north side of the bay,

* Navigators differ much in the situation of this island, some placing it in lat. 23° 35′ S. lon. 43° 27′ E., others in lat. 23° 42′ S. lon. 43° 04′ E. In Requisite Tables, 23° 28′ S. lon. 44° 9′ E. The Hon. Thomas Howe made it 44° 03′ E. by an eclipse of first satellite of Jupiter.

on which the sea does not always break; the outermost of them is a reef of rocks, distant about 4 miles to the N. E. and the sea breaks on it in stormy weather.

After passing Sandy Island in 13 or 14 fathoms water, in steering to the eastward, a piece of high land, close to the sea, on the south side of the bay, will be perceived, and another piece of high land at some distance in the country. The entrance of Onglahé River, called by the English, Dartmouth River, will then be open, and serve as a leading mark in sailing to the anchorage, by observing the marks near it.

Description of St. Augustin's Bay.

The north point of this river is a steep bluff, and the south one, which is also steep, has a low woody point terminating it to the northward. The high bluff point ought to be kept a sail's breadth* open with the low woody point, then the bluff point of the north-side the river will bear E. ½ S.

After having lost soundings on the bank off Sandy Island in running to the eastward, no more bottom will be obtained till abreast the first low sandy point on the southern shore. A reef projects from this point to a considerable distance, on which the sea breaks. There are 9 and 10 fathoms water close to the breakers, and 14 or 15 fathoms 2 cable's length without them, from whence it deepens gradually to 28 fathoms, and at a small distance farther out no soundings.

The southern shore of the bay is low and sandy to the Tent Rock; this is an isolated rock, situated below high-water mark, about half a cable's length to the westward of the steep cliff at the water's edge, which is the west end of the piece of high land on the south side the entrance of the river.

From the low sandy point to the Tent Rock, the south shore is lined by a reef, distant from it about a large half mile. This reef is covered at half-tide, but the constant surf generally shews the limit of danger, except near the eastern part, where two rocks are situated on its outer edge; these are always visible when the tide is not high, appearing at ¾ flood, or ¼ ebb, like two small boats or canoes, but they are covered at high spring tides. From these rocks, the reef converges toward the shore near the Tent Rock, leaving a bank of soundings to the northward, which is the proper anchorage.

About half way between the low sandy point where the breakers are, and the 2 small rocks mentioned, there is a swatch in the reef, with 16 or 17 fathoms close to it, which makes the soundings not a certain guide in passing along; for some ships have struck on this part of the reef, by hauling in towards it, when they could not get ground with the hand-lead.

With directions to proceed to the anchorage.

With the sea-breeze, which generally sets in about mid-day, a ship after passing Sandy Island may steer right for the bottom of the bay, keeping a moderate distance from the edge of the reef; at other times, when the wind generally prevails from the S. W. and Southward, she ought to pass the breakers off the low sandy point in 14 or 15 fathoms, and the swatch in the reef may be passed in 21 fathoms, there being 34 fathoms about 2 cable's length farther out, and then no soundings.

Between the swatch and the two rocks that appear at ¾ tide, the reef is nearly steep to, in some places, but a ship may steer along, getting a cast at times, in 29 or 30 fathoms. There are 12 fathoms a small distance outside of the two small rocks mentioned, 20 fathoms a small cable's length from them, and 30 fathoms N. ½ E. from them about 3 cable's lengths, from whence the bank shelves suddenly into deep water.

A ship should continue to steer to the eastward, with the north point of the river bearing about E. ½ S. till Westminster Hall is on with a low sandy point on the north side of the bay, bearing N. E. ½ N.; she will then begin to get into regular soundings on the bank, and the 2 small rocks on the edge of the reef will bear about S. W. The depth decreases gradually on the bank, from 26 fathoms near the outer edge, to 8 and 9 fathoms toward the Tent Rock.

* This is the mark given by Mr. Nichelson for steering up the bay, but it is, probably, too distant as a guide for the entrance, particularly when it is considered that a sail's breadth is an indeterminate angle.

The common anchorage is in 8 to 12 fathoms, with the Tent Rock bearing from S. ½ E. to S. ½ W. good holding ground, which is the best situation, and where there is most room. Proper situation to anchor.

The broadest part of the bank is with the Tent Rock S. ½ E. there being soundings two-thirds of the bay over from it, with this bearing. No ship should let go an anchor in more than 15 or 16 fathoms, unless it is with this bearing of the Tent Rock, and then in not more than 18 or 20 fathoms, for the bank shelves off suddenly from 24 fathoms in most places. The Intrepid, in 10½ fathoms, had the Tent Rock bearing S. ½ W. off shore 1 short mile. The Preston, in August, 1801, anchored in 14 fathoms, the Tent Rock S. 6° W. distant 1½ mile, the bluff point on the south side the entrance of the river, S. 81° E., distant 3 miles, the low green point on the north side of the entrance, E. 3¼ miles, a white rugged cliff elevated nearly perpendicular, N. 63° E., and Westminster* Hall, N. 40° E. distant about 14 miles.

A ship should moor east and west, that she may ride between the two anchors with an open hawse when the wind blows strong from the northward, which sometimes happens; should she moor north and south, in some places, the outer anchor would be in very deep water. During the N. E. monsoon it is considered dangerous to lie in this bay, the Northerly and N. W. winds, which prevail much in that season, blowing directly into it, accompanied by a heavy swell. And how to moor. Probably not safe in the N. E. monsoon.

The time of high water at full and change, is stated by Mr. Nichelson to be at 2 hours 15 minutes. In August H. M. S. Intrepid remained there 20 days, and found the tide flow 5 hours 15 minutes on full and change, and rose in perpendicular height at the entrance of the river 13 feet. Variation 24° west in 1804. Tides.

Wood and water, are got near the entrance of the river. The Intrepid towed her water on board in rafts, but found it tedious, the distance being near 3 miles, and several casks were lost on the bar by the surf. At low-water, spring tides, the depth on it is only 2 feet, and the stream runs almost constantly down the river, although the perpendicular flow of tide is 12 and 13 feet on the springs. Aligators are seen in it at times. Wood and water.

Ships generally get a good supply of bullocks, sheep, and poultry, at this place; but it has been customary to give the King of Baba a present when a large supply is wanted, to induce him to encourage his people to trade: vegetables are scarce. The inhabitants are hospitable, but subtle and prone to revenge. The anchorage abreast the Tent Rock, is about 6 or 7 miles distant from Sandy Island, and nearly on the same parallel. Refreshments, &c.

TULLEAR BAY, is situated about 4 leagues to the northward of Sandy Island, where there is anchorage within the reefs near a small river. From hence, to the north point of Dartmouth River, the coast on the north side of St. Augustin's Bay has a reef †parallel to it; within which, there is an intricate channel for small vessels, leading from Tullear Bay to the entrance of Dartmouth River. This reef projects above a league from the shore in some places, and is steep to, on the S. and S. W. sides, fronting St. Augustin's Bay. Tullear Bay.

The entrance to Tullear Bay is by a gap in the reef; the anchorage is in 6 and 7 fathoms, but the entrance being intricate, and the bottom rocky, this place is not frequented.

The Arabella, on the 4th June 1714, sent her boat a-head to sound, and followed the boat into the passage leading into Tullear Bay, least water ¼ less 7 fathoms a few casts on the Bar, then deepened gradually to 12 fathoms, keeping nearest the southern shore, and steering S. S. E. to bring Westminster Hall to bear about S. E., afterward anchored in 6 fathoms ouze, with the Table bearing S. E. ½ E., mid-channel between the shore and the breakers, the latter bearing N. W., distance off shore 1 mile, and had 7 fathoms within a cable's length all round the ship. Procured some bullocks, &c., and on the 14th at 6 A. M. weighed with a

* This Table Hill, at some views, is thought to resemble Westminster Hall, having a kind of acute nob at each end, like that building, from which it has been named.

† The company's ship Winterton, was wrecked on this reef, by standing too near the land in the night.

land breeze at S. E., least water 8 fathoms in running out over the bar. Variation in 1714, was 23° W.

Mouroundava Road.

MOUROUNDAVA, situated in lat. 20° 10′ S. is a place where some trade is carried on, and where a ship may get refreshments. Water is procured in the rivers adjacent to the road. The anchorage is in 8½ or 9 fathoms, with a remarkable high tree bearing E. S. E. by compass, near the sands which bar the rivers Youle and Moroundava. This place is seldom frequented by European ships, being exposed to N. W., S. W., and Westerly winds.

The Arabella, on the 14th August 1714, was in lat. 20° 12′ S. Youncoule or Youle, bearing S. E. about 5 miles, sent the pinnace to a canoe who had one of the king of Timinirobus people in her, who gave us a woman pilot to conduct us to the anchorage. She anchored us in 8½ fathoms, Youncoule bearing S. E. 2 or 3 miles, but being too near the bar and a shoal that lies off the river about a mile, weighed and steered N. by E. 1½ mile, then anchored in 9 fathoms, Youncoule bearing S. S. E. distant 3 miles, extremes of the land from S. W. to N. E. by E., and the large Tree S. E. ¼ E., which stands a little to the northward of the river. Var. 22° 30′ W. The Clapham galley, had sailed 2 months before with 300 slaves, and the Arabella got 203 slaves here, and sailed on the 24th September, for Bencoolen.

Coora Ryka, &c.

COORA RYKA, is a small place, in lat. about 17° 40′ S. to the S. Eastward of Coffin Island, where a ship may anchor, and procure water in case of necessity; close to the northward of this place, lies the small river Vulla, directly opposite to Coffin Island, and 9 leagues farther northward is the river Manumbaugh, in lat. about 17° 12′ S. Between Coffin Island and the coast, there is a channel with 5 and 6 fathoms in it. If a ship should pass through it, or intend to anchor at any of these places, caution is requisite to avoid the coral patches about this part of the coast of Madagascar. The tides set strong through this channel, between Coffin Island and the main-land.

Geo. site of Cape St. Andrew.

CAPE ST. ANDREW, is about 33 leagues to the northward of Manumbagh River, in a direction about N. E. ¼ N. It appears to be situated in lat. about 16° 02′ S. lon. 45° 16′ E., and is the north-western extremity of Madagascar, the land from hence taking an E. N. Easterly course. The N. W. coast of Madagascar from this Cape to Cape Ambre, has for a century been little known to English navigators, until Captain David Inverarity explored the harbours, and nearly the whole of this part of the coast, during a trading voyage along it, in 1802.

and of Table Cape.

TABLE CAPE, is placed by him in lat. 15° 43′ S. lon. 46° 6′ E., the direction of the coast being E. N. E. from Cape St. Andrew to the former. Directly south from Table Cape, there is a large opening in the land, called Boyana Bay, which seemed spacious, but was not explored. Table Cape forms the N. W. extremity of this Bay, and has a Table Hill on it.

Bembatooka Bay, Geo. site.

BEMBATOOKA BAY, is large and safe, the entrance of which is in lat. 15° 43′ S. lon. 46° 28′ E. about 7 leagues east from Table Cape. The entrance of this Bay is about 3 miles wide, the depths from 18 or 20 fathoms on the west side, to 7 and 8 fathoms near the point Sareebingo, east side of the entrance, on which is the village Majunga. The depths from the entrance are 18 and 20 fathoms to Bembatooka point, which is about 3 leagues within, on the east side, having a small Island close to it, and a reef projecting to the westward. Bembatooka Town is on the south side of the point, where ships may lie land-locked, sheltered from all winds, in 5, 6, or 7 fathoms, close under the point near the town. Bullocks are plentiful at this place, at 2 dollars each; rice and other articles, may also be procured at reasonable prices. From Bembatooka Point, the Bay extends in a circular form

about 3 leagues farther inland. Several small rivers discharge their contents into this part of it, which is generally shallow, having 2 low Islands near the southern shore. Variation here 17° 30′ W. in 1802. Rise of Tide about 13 feet. This Bay is an eligible place to refresh a fleet of ships.

MAJAMBO BAY entrance, in lat. 15° 10′ S. lon. 47° 6′ E., bears N. E. ¼ E. from Bembatooka Bay entrance, distant 50 miles, having 9 and 13 fathoms in it, and from 18 to 30 fathoms to the distance of 3 leagues within, which part is about 3 miles wide; from hence, it extends in a circular form about 3 leagues farther to the southward. This part is large, but the bottom is shoal all over, except at the N. W. point towards the entrance of the Bay, there is anchorage under it in 6, 7, and 8 fathoms, land-locked, and sheltered from all winds. This Bay has several rivers around, which fall into it, with a Table Hill near the rocky point on the east side of the entrance. The tide flows here on full and change, at 5 hours, and rises 13 feet. Variation 16° 25′ W. Geo. site of Majambo Bay.

NARREENDA BAY entrance, is between the Island Nosu Sancassee and Moormona Point; the latter bearing N. E. from Rocky Point at the entrance of Majambo Bay, distant about 15 leagues. The Island Nosu Sancassee is in lat. 14° 31′ S. lon. 47° 45′ E. Between this Island and the Point mentioned, the entrance into Narreenda Bay is more than 2 leagues wide, from whence it takes a direction about S. by W., extending about 8 leagues inland, and is of an oblong form, 8 or 9 miles broad near the entrance, and 5 or 6 miles in breadth at the village Narreenda, near the bottom of the Bay. The general depths are 15 to 11 fathoms near mid-channel, and along the western shore, 5 fathoms toward the Bank on the eastern side, and 4, 5, and 6 fathoms where the anchorage is, opposite to the village Narreenda, where the governor resides. The deepest water here, is near the western shore. High water at 5¾ hours. Variation 15° 50′ W. Geo. site of Narreenda Bay.

MAMBACOOL, OR DALRYMPLE'S BAY, is in lat. 13° 31′ S. lon. 48° 9′ E., situated at the north extremity of the peninsula on the west side of the great Bay, Passandava. Geo. site of Mambacool Bay.

It has 8 fathoms in the entrance, 5, 6, and 7 fathoms inside, and is recommended as particularly safe and commodious for wooding, watering, and refitting ships. In coming in, keep the west point of the entrance a-board. About 3 miles N. W. from this Bay, there is a small Island near the north point of the land; when it bears west 1½ or 2 miles, the course is directly south (true bearings) into Mambacool Bay, which abounds with fish, but is not inhabited.

There are several Islands, and dangerous coral patches, between this Bay and Nosa Sancassee Island. Some of these patches lie 4 leagues from the shore, and have only 2½ or 3 fathoms water on them.

PASSANDAVA BAY, is on the east side of the peninsula already mentioned. It is a large Bay of a square form, extending directly south from the entrance to the distance of 6 leagues. Passandava Bay, Geo. site of the town.

Passandava Town is at the bottom of the Bay, in lat. 13° 45′ S. lon. 48° 23′ E.; about 2 miles off it, the depths are 4, 5, and 6 fathoms, from hence increasing to 20 and 22 fathoms at the entrance. The large Island Noss Bey, is situated to the northward of this Bay, having 2 small Islands between it and the entrance. The great channel is to the westward of these Islands, but there is a passage to the eastward of them, by which small vessels may enter the Bay. Variation here 14° 45′ W.

Provisions obtained at these places.

Bullocks, and refreshments, wood and water, may be procured in great plenty, and on most reasonable terms at all the above places. The inhabitants are shy of strangers until acquainted with their business; but they seemed to be an inoffensive, fair dealing, and hospitable people.*

Cape St. Sebastian;

From the Island Noss Bey, Cape St. Sebastian bears about N. E. ¼ N., distant 18 leagues. About half-way between them there is a group of Islands, some of which are 6 leagues off shore, and the coast from Cape St. Sebastian lies nearly south 10 or 12 leagues, then S. by W. and S. S. W. 8 leagues farther; from hence it turns sharp round to the west toward Noss Bey, forming a Bay called Chimpaykee, to the eastward of an Island of the same name, which is situated near the east end of Noss Bey.

West Island Geo. site.

Close around Cape St. Sebastian, there are several small Islands; that called West Island is about 3 or 4 miles due west from the Cape, and is situated in lat. 12° 28′ S. lon. 48° 50′ E. Wood Island is in lat. 12° 14′ S., and about 5 leagues to the N. Westward of it, lies a small Island environed by a reef of rocks. The variation 5 leagues north from it is 13° 35′ W.

From Cape St. Sebastian, the coast takes a direction about N. E. nearly to Cape Ambre, the distance between these Capes being about 15 leagues, with a concavity in the coast to the N. E. of the former. Cape St. Sebastian has a hill over it, and a regular sloping oblong mountain to the eastward of it, at a small distance inland.

The verge of the bank of soundings, dangerous in many places for large ships.

From Cape St. Andrew to the north end of Madagascar, a bank with soundings extends along the whole of the coast, projecting from it 2 or 3 leagues in some places, and in others to the distance of 8 or 9 leagues from the shore. Ships drawing more than 12 feet water, should be very careful in approaching the edge of the Bank, where in many places there are only 3 fathoms coral. Several of these coral flats are of considerable extent, and generally situated on the verge of the bank of soundings; it is therefore, requisite, to keep a good look-out from the mast-head for discoloured water, or keep a boat a-head sounding.

To sail from St. Augustin's Bay to the northward,

IF BOUND TO THE COMORO ISLANDS, a ship departing from Sandy Island, or having seen the land about St. Augustin's Bay, may steer N. by W. or N. N. W. by compass, until she is 8 or 10 leagues from the shore, then steer about N. by E. or N. The direction of the coast to Point St. Felix, in lat. 22° 36′ S. is about N. N. W. *true bearing*, or rather a little more westerly in some places. A North and N. ½ W. course *by compass*, may be steered in the day, which is parallel to the coast as far as Point Felix, but in the night, the coast should not be approached close, for high breakers extend along it, and it is low in several places near the sea, composed of sand downs, with verdure interspersed. Point St. Felix is a sand hill, with some trees on it. The variation here in 1798, was 23° 30′ W.

In lat. 21° 58′ S., nearly on the meridian of Point St. Felix, a small Island is situated, called First Island, and 8 leagues farther northward is Second Island, which are distant about 3 leagues from the coast: a rocky bank is said to lie about half-way between them. Nearly abreast of Second Island, the projecting part of the coast is called Cape St. Vincent, from whence it takes a N. N. Easterly direction toward Moroundava, having several sand banks between them, from 3 to 4 leagues off shore.

Crab Island, in lat. about 21° 8′ S. is nearly on the meridian of First Island; it is small, and placed in De Apre's chart about 12 leagues from the coast; probably it is not so much, for in August, 1803, it bore S. E. by S. from the Huddart, when the high land of Madagascar was in sight.

* The peaceful natives of Johanna, however, affirm, that their villages are destroyed, and many of their people cruelly maimed or massacred, by the inhabitants of Madagascar, who come over in boats and prey upon them.

After leaving the coast about St. Augustin's Bay, or Point St. Felix, steer to pass well to the westward of Crab Island, by getting 30 or 40 miles west of Sandy Island by chronometers, when near the parallel of the former; then steer true north, keeping in lon. 40 or 45 miles west from Sandy Island; which will lead to the westward of the Parcel Bank; and when near the lat. of the Island John de Nova, it will be proper to reduce the lon. made by chronometers from Sandy Island to about 25 miles west, in passing. This will carry you to the eastward of John de Nova, and the same meridian preserved, will lead to the westward of the Chesterfield Shoal.

A good look-out is requisite when crossing the parallels of these two places, and from hence a direct course may be steered for Johanna, if to touch there; in such case, it will be proper to pass between it and Mohilla. If not to stop at any of the Comoro Islands, pass through any of the channels between them, or to the westward of the principal Island, as circumstances require. Amongst these Islands the current generally sets westward, rendering it prudent, when bound into Johanna, early or late in the season, not to fall to the westward of Mohilla, as the winds are frequently light and variable at these times.

The route now described, is recommended in preference to that along the coast of Madagascar, over the Parcel Bank; but the latter having been much frequented hitherto, it is proper to point out the dangers contiguous to it.

Pracel Bank.

PRACEL, OR PRACELLA BANK, extends a great distance from the coast of Madagascar, having upon it several dangers, the true situations of which are not correctly determined.

The southern limit of this bank is at the Barren Islands, and it reaches nearly to Cape St. Andrew; the soundings on it are in many places very uneven, it being generally composed of coral and sand; at the western edge it is steep, having a sharp declivity to seaward.

Barren Islands.

BARREN ISLANDS, are a group of Islands, with reefs and breakers projecting from some of them to a considerable distance, and joining several of them together. The Islands are low, with white sandy beaches, and shrubs on them; the westernmost or outermost Island of the group, is in lat. about 18° 26′ S. and in lon. 44° 15′ E. by mean of several ships chronometers and lunar observations, or 15 miles east of Sandy Island, at St. Augustin's Bay; and is distant from the coast 8 or 9 leagues. These Islands are situated on the southern edge of the Pracel Bank, and several ships have been in danger of running on them in the night, when steering for the edge of the Bank.

Geo. site.

Dangerous to approach in the night.

The Fox, in June, 1783, was close to the breakers which lie a few miles to the southward of the Barren Islands; this happened at dawn of day, when the Islands were perceived at 2 or 3 miles distance, and the reef much nearer. She was obliged to make a tack or two, to round the outer end of the group, and when close to these Islands, the high sloping land of Madagascar was in sight from the deck to the eastward, distant 10 or 11 leagues.

June 12th, 1792, the Montrose at day-light saw part of Madagascar E. N. E. distant about 9 leagues, and the southernmost Barren Islands bearing N. N. W. she immediately hauled to the westward and cleared them.

Coral banks of 7 fathoms to the N. W. of them; & geo. site.

June 30th, 1799, the Walmer Castle and Hughes in company, at day-light saw the northernmost of the Barren Islands, bearing S. E., distant 4 or 5 leagues. They sounded and had 13, 10, 7, and 7½ fathoms coral rocks, hauled out west 3 miles, and had from 10 to 15 fathoms; from hence stood 3 miles more to the westward, and deepened to 90 fathoms on the edge of the Pracel Bank; the lat. then observed at noon 18° 6′ S. lon. by chronometer 44° 10′ E.* Variation 21° W. Current setting N. E. 1 mile per hour.

* Their lon. seems to have been rather too much to the eastward.

June 30th, 1801, the Fort William, Worcester, Airley Castle, and Hawkesbury, got soundings on the Bank at 10 P. M. in 20, 18, and 16 fathoms, and anchored. They weighed and stood to the northward in the morning, with boats a-head sounding, the least water was 8 and 9 fathoms white coral and sand, and the shoal part of the Bank which they passed over, is from lat. 17° 34′ S. to 17° 16′ S. lon. 43° 31′ E. Two of these ships at noon, made the observed lat. 17° 17′ and 17° 18′ S. when in 14 and 19 fathoms, and the lon. by 3 different ships chronometers at the same time, was 43° 29′ E. 43° 31′ E. and 43° 35′ E.; the Hawkesbury about 2 or 3 miles more to the westward, was on the edge of the Bank in deep water.

Soundings on the west part of the Pracel Bank, and geo. site.

June 16th, 1800, the Brunswick and fleet got soundings on the Bank, 23 fathoms coral; at noon in 22 fathoms the lat. observed was 17° 30′ S. lon. 43° 32′ E. 43° 29′ E. and 43° 29′ E., by 3 ships lunar observations; from hence they steered N. N. E. ½ E. to N. E. by N. 37 miles, in soundings from 23 fathoms, increasing irregular to 38 fathoms, afterward no ground 40 fathoms, steering N. E. ½ N.

May 10th, 1799, lat. observed 17° 9′ S. lon. 43° 40′ E. by chronometers, the Taunton Castle was on the edge of the Bank, no ground 45 fathoms; a little before noon she had 25 fathoms on it.

July 19th and 20th, 1798, the Walpole had light winds on the Pracel Bank, and had soundings generally from 15 to 30 fathoms. She lay by, during these 2 nights, and made sail at day-light each morning. When she first got soundings, 60 fathoms on the edge of the Bank, the lat. was 17° 51′ S. lon. 43° 30′ S. by ☉ ☾; on the following day in 29 fathoms, the observed lat. was 17° 50′ S. lon. 43° 56′ E. by ☉ ☾, and 43° 49′ E. by chronometers; from hence, she continued to have soundings, till in lat. 16° 30′ S. lon. 44° 4′ E.

Result. From the above extracts, taken from original journals of the ships mentioned, the western limit of this Bank appears to be in about 43° 28′ E. lon.; and from the S. W. end, contiguous to the Barren Islands, it extends nearly on the same meridian to lat. 17° 16′ S., or probably farther to the northward, before it diverges from the meridian to the eastward.

Rocky bottom and dangers on the S. W. part. The Worcester in 1790, got 10 and 12 fathoms rocks on the S. Western edge of the Bank, at 2 P. M., August 20th, when the lat. was 18° 01′ S. from noon observation, and lon. 43° 38′ E. by observation of ☉ ☾ at the time; and from the mast-head, the appearance of breakers was seen to the eastward.

The Thistleworth on the 28th July, 1714, saw the rocks under the bottom, and on sounding, had only 3 fathoms coral rocks, low land then discerned bearing E. S. E., distant about 5 leagues, thought to be on the main, steered N. W. and deepened fast to 30 fathoms no ground. When in 3 fathoms, the lat. was 18° 11′ S. computed from noon observation, and it was probably the northernmost of the Barren Islands, and not the land of Madagascar seen at that time.

The Nathaniel, on the 25th April, 1712, before day-break, struck on the reef that projects about a mile from the northernmost Barren Island, and beat off her rudder; but the anchor having been previously let go in 4 fathoms, she quickly warped off into 11 fathoms and hung her rudder again. Lat. then observed 18° 14′ S. the northernmost Island bearing N. by E., one South, another S. E., and another S. by E. 5 or 6 leagues, being then ½ a mile off the reef, bearing from East to N. by W. ½ W.

As the Walmer Castle had only 7 fathoms, and the Thistleworth only 3 fathoms on the shoal coral patches to the N. W. of the Barren Islands, these Islands and the S. W. part of the Bank, ought to be approached with great caution, and a ship should haul out instantly to the westward, if she happen to get soundings on this part of the Bank.

Coffin Island. COFFIN ISLAND,* small and low, of black appearance, with a white sand beach, has been mistaken for the Island St. Christophers by several navigators in passing it, from

* Called Savou in the French charts, by the Dutch Dodkist, i. e. Coffin.

their not having seen the adjacent coast of Madagascar, which is low near the sea opposite to this Island, but has a conical peak inland, and generally mountainous there. This Island is dangerous to approach on the S. and S. W sides, as shoal coral banks project from it 5 and 6 miles in these directions, and it is probably surrounded by shoals, extending out several miles. To the westward of it, at 2 leagues distance, there is a sand bank which stretches to the northward a considerable way, and is nearly covered at high water spring tides.

and a sand bank.

The Taunton Castle, saw the land from the mast-head at day-light, April 18th, 1791, appearing something like a sail, bearing E. N. E. She then steered between N. E. and N. N. E. 18 miles to 9 A. M., when the water appearing discoloured, she struck on a bank of coral and sand in 3½ fathoms, in the act of heaving to, to sound. When aground, Coffin Island bore E. N. E. about 5 miles, and a sand bank N. N. E. about the same distance. To the N. W. the water was found to be very shoal, but deepened fast to the S. Westward. A small anchor being laid out in this direction, the ship was hove into deep water; the water had flowed 13 feet when the ship floated, and the sand bank nearly covered, then just visible from the mast-head, the tide setting 2 miles an hour to the N. E. Whilst she lay on the coral bank, the weather was very fine, and the sea smooth; notwithstanding, her fore-foot was found much injured, on examination in Bombay dock.

Taunton Castle grounded on a coral bank;

When they first saw this Island, they supposed it to be St. Christophers, trusting to observations of ☉ ☾, taken 5 days before, which agreed with the chronometer, but made the lon. above 1 degree to the westward of observations by moon and antares,* taken 12 hours before the ship struck.

having mistaken it for St. Christopher's.

The cutter was sent to examine the Bank to the southward and eastward of the Island, and found the depths about 3 leagues to the S. E. and Southward of it, generally sandy bottom, from 10 to 7 and 8 fathoms. To the eastward of the Island, between it and the Madagascar shore, the depths decreased to 5 and 6 fathoms soft ground, in mid-channel, shoaling as the Island or the coast were approached to 3 and 3½ fathoms hard ground. It was therefore concluded, that the channel between Coffin Island and the adjacent coast, has from 4 to 5 fathoms in it at low water, shoaling towards either shore; the water in it was thick, containing a quantity of weed, and the tide set strong through it to the northward.

Channel inside this Island.

When the Taunton Castle struck on the coral bank, the land last seen was the Island Trinidad, near the coast of Brazil; after getting clear of the ground, she remained at anchor near the shoal, with light northerly winds till the 20th; on this day, she passed the sand bank on the S. W. side, at the distance of 4 or 5 miles, deepening gradually to 22 fathoms when 3 leagues to the westward of it, then shoaled at once to 7 and 8 fathoms on a coral spit, in passing over which, the rocks were visible under the bottom; afterward, she steered about N. by W. by compass, in soundings from 15 to 32 fathoms till in lat. 16° 56′ S. from hence she steered N. E. by N., deepening to 36 fathoms, in lat. 16° 34′ S., and then no ground at the same depth.

A shoal spit to the westward of the sand bank.

Coffin Island† was seen by the Princess Amelia, and London, in company, August 12th, 1795. They steered E. N. E. and N. E. by E. 8 miles from noon, had 3 casts during this run, of 13, 20, and 22 fathoms, when at half-past 2 P. M., an Island was seen from the mast-head, bearing east.

* These observations were found to be right, but no confidence was placed on them, as they differed greatly from the chronometer, and those taken 5 days previously by ☉ ☾. This is an example, evincing how cautious navigators ought to be in trusting to a single chronometer, during a great interval of time; or to lunar observations, by an object only on one side of the moon.

† In the London's journal, it is called St. Christopher's, but Captain Millet remarks in the journal, that it was Coffin Island, and that it and the coast of Madagascar hereabout, is placed in the charts too far to the eastward.

Captain Millet's description of the Island, &c.

Captain Millet, of the Princess Amelia, states in his journal, "at 3 P. M. I saw from the mast-head, a small Island bearing about E. S. E. by compass, also a sand bank, with a large extent of breakers, bearing east, about 4 leagues distance; our lat. was then 17° 30′ S. from noon observation, and lon. made from Sandy Island, St. Augustin's Bay, 19 miles west by time keeper. The breakers of the sand bank are therefore 7 miles west from Sandy Island, which may be depended upon."

Coffin Island is distant from the coast of Madagascar about 4 leagues, and this part of the coast is certainly much farther to the westward, in its relative position from St. Augustin's Bay, than represented on the old charts.

Geo. site.

By mean of several ships chronometers and lunar observations, Coffin Island is in lat. 17° 30′ S. lon. 44° 4½′ E. or 4½ miles E. from Sandy Island.*

The Bank extends far westward from it.

The soundings on the Pracel Bank, in the lat. of this Island, appear to extend 11 or 12 leagues to the westward of it;—this may be inferred, from the observations of the fleet in 1801, (already mentioned,) and those of other ships. To the northward of 17° S. lat., the edge of the bank declines more to the N. Eastward.

Our previous knowledge of this part of the channel of Mozambique very imperfect.

Coffin Island, having been so frequently mistaken for an imaginary island called St. Christopher's, which was thought to be situated 12 or 14 leagues distant from the coast of Madagascar to the westward, has been the cause of great embarrassment to the navigation of the Mozambique Channel; for John de Nova and St. Christopher's have been projected on most charts as two different islands, distant from each other more than 1 degree of lon., although they are one and the same island. The Chesterfield Shoal is erroneously placed in the charts, from the same cause.

Chesterfield Shoal,

CHESTERFIELD SHOAL, so named from the ship Earl Chesterfield, having, with the Walpole and Hector in company, passed close to it on August 13th, 1756. These ships passed in sight of Coffin Island† the preceding evening, which is called in the Chesterfield's journals, St. Christopher's. In this ship, therefore, Coffin Island was mistaken for the *imaginary* Island, St. Christopher's, and the situation of the Chesterfield Shoal has been placed in the old charts, and described in former Directories, according to the run of this ship from St. Christopher's, or N. 5° E. from it, distant 24 leagues; whereas, the relative position of the shoal is really from Coffin Island. The journals of the Chesterfield only, have been consulted in assigning to this shoal its geographic situation, by which it has continued for ½ a century projected on the charts, at the distance of nearly 1 degree and a ½ from the coast of Madagascar, considerably detached from the edge of the Bank; whereas, had the journals of the Walpole been equally consulted as those of the Chesterfield, this error might have been at first averted.

erroneously placed in the charts and directories.

Walpole's description.

Captain Fowler's journal of the Walpole, in company with the Chesterfield, states, that the Island seen in the evening could not be St. Christopher's, but an Island nearer Madagascar; although they did not sound at the time, nor till 2 A. M. when the water was observed to be discoloured:—at this time, they sounded in the Walpole, had 23 fathoms, and made the signal; from hence, steering N. E. by compass, the soundings decreased to 16 and 17 fathoms, at 5 A. M.; at ¼ past 5, breakers were seen close a-head, and a rock on the middle of a sand bank; at ½ past 5 the breakers bore N. after hauling to the westward to clear them; at 6 they bore N. E. by N., 1 mile, deepening fast from 7 fathoms near them, to 20 fathoms in standing westward.

* In May, 1803, the Experiment saw Coffin Island, and the breakers on the bank to the N. W. of it; she had 25 fathoms, and made the Island in lat. 17° 29′ S. lon. 44° 5′ E. by ✱ and ☾, but thought it was St. Christopher's.

† Commander's journal of Chesterfield states, at 5 P. M. August 13th, saw an island, (Coffin Island,) bearing N. E. Easterly about 4 leagues. At 6 P. M. it is marked in First Officer's journal, E. 2 or 3 leagues. In First Officer's journal of Walpole, it is said to be distant 6 leagues, at 5½ P. M.

By the Chesterfield's journals, from passing the Island in the evening, they steered N. N. E. 38 miles, and N. E. 36 miles, when the shoal was seen in the morning, bearing from N. N. W. to N. W. ¼ N. distant about 2 miles; they directly hauled out W. N. W., had 6, 7, and 8 fathoms in passing near the breakers, then at once 19, 20, and 25 fathoms; and when 12 miles to the westward of it, no ground 40 fathoms. The shoal is here, said to be about a mile in length east and west, having on it a rock, with a patch of reddish sand to the eastward of it, on which the sea broke furiously, though the weather was moderate. Chesterfield's. they passed to the westward of it.

The Warren Hastings, saw this shoal on the 8th July, 1787, and carried a series of soundings on the Pracel Bank, in steering toward it, and also after passing. From 6 P. M. she steered E. by N. 27 miles, and E. 16 miles to 5 A. M., in regular soundings 26 fathoms; at 6 P. M., increasing to 30 and 32 fathoms sand and shells, about midnight, and from 36 to 24 fathoms, till 5 A. M., frequently blue mud, at which time she hove to, until day-light. From 6 A. M. steered N. E. by N. 14 miles, when at 8 a rock was seen bearing N. 5 or 6 miles, the depths were at this time 10, 13, and 18 fathoms, brown sand. From this time she steered till noon, N. E. 7 miles, and N. E. by N. 21 miles, in 18 and 20 fathoms, having passed to the eastward of the shoal, and observed in lat. 16° 00′ S. From noon she steered N. E. by N. 10 miles, increasing the depth regularly, afterward no ground 30 fathoms. Warren Hastings description; she passed to the eastward of it.

The Worcester also fell in with the Chesterfield Shoal, on the 21st of August, 1790. At 2 P. M. she sounded in 22 fathoms, then in lat. 17° 44′ S. lon. 43° 37′ E., with the wind at north she stood to the W. N. W. 5 miles, deepening to 54 fathoms, it then veering to N. W. and Westward, she steered during the night mostly N. E., in various soundings from 30 to 13 and 16 fathoms, hauling off north at times when the depth decreased. At ½ past 10 A. M., when in 22 fathoms mud, the shoal was seen from the mast-head, bearing N. E. by E., about 3½ leagues; steered north till noon, in soundings 22 and 20 fathoms, the shoal then E. 32° S. 7 or 8 miles. She steered northward till 3 P. M. 22d, in different depths from 27 to 13½ fathoms, then deepened from 25 fathoms to 30, 40, and 65 fathoms no ground, and bore away N. E. by N. Worcester passed over the west part of the Pracel Bank, saw the shoal, passed to the westward of it.

In this ship, they judged the extent of the shoal to be about a ¼ of a mile from north to south, where it is dry, consisting of reddish sand, with a black rock in the middle, and breakers surrounding the sand. Description.

The true situation of the Chesterfield Shoal, may be approximated from the following observations.

In the short run of 12 hours from Coffin Island to the shoal, made during the night by the Walpole and Chesterfield, will place it 6½ or 7 miles east of the meridian of that Island, allowing the latter as already described, in lon. 44° 4½′ E. the shoal will be by their run in.

Lon. 44° 11′ E. . . In a run of 24 hours from it to the merid. of Valentine's Peak,* Mayotta, in
44 6 . . and in lat. 16° 21′ S. by Warren Hastings.
44 5 . . ..... 16 20½ } or 5 miles E. of Sandy Island, St. Augustin's Bay, by Worcester's journal.
44 13 . . ..... or 13 miles E. of Sandy Island, by Walpole's do.

Geo. site of this shoal.

Mean. 44° 8¾′ E. lon. 16° 20¾′ S. lat. by these ships from account, which corresponds with the situation of it obtained by Mr. R. H. Gower, of the Worcester, from many lunar observations, viz. 44° 7′ E. lon. and in lat. 16° 19′ S. by noon observation in sight of it, bearing E. 32° S.

* Allowing Valentine's Peak in lon. 45° 14′ E., she made 68 miles difference lon. east from the shoal to this Peak. The Chesterfield made the shoal by account, 30 miles west from Westminster Hall; but Captain Fowler's journal makes it 2 miles east, and the Second Officer's journal 12 miles east from the same place, although these ships were in company from St. Augustin's Bay to the shoal.

General remark. From the foregoing descriptions, it appears, that the Chesterfield Shoal, Coffin Island, and Sandy Island, at St. Augustin's Bay, are nearly on the same meridian, although in the old charts, this shoal is generally placed about 40 miles to the westward of Coffin Island, which has originated from the cause already mentioned.

Directions to avoid the Chesterfield Shoal. In running to the northward, the Chesterfield Shoal may be avoided by keeping to the westward of the edge of the Bank, or by getting soundings on the edge of it, a few leagues to the southward of the parallel of the shoal; then edging away to the northward to get out of soundings when crossing its lat., or just venturing to get a cast of deep soundings at times, on the verge of the bank. Proceeding to the southward, this shoal may be avoided in the same manner, by keeping outside, or barely on the verge of the Bank of soundings.

The Chesterfield Shoal, is the most northerly danger on the Pracel Bank, and the farthest from the Madagascar shore. In lat. about 16° 48′ S., at the distance of 5 leagues from the coast, there is said to be a sand bank even with the water's edge. It may be observed, that the Pracel Bank along the S. W. and Western verge is generally steep, having a sharp declivity from 30 or 35 fathoms, to 50 and 60 fathoms no ground.

General remark relative to John de Nova. JOHN DE NOVA, OR ST. CHRISTOPHER'S, has in most old charts been marked as 2 Islands, at a great distance from each other; the Dutch, however, seem to have known that only 1 Island did exist at a great distance from the coast of Madagascar in this part of the channel, which is called Juan de Nova, in Van Keulen's chart.

Geo. site. By mean of many ships chronometers and lunar observations, this Island is situated in lat. 17° 02′ S. lon. 43° 09′ E.

This may be considered an approximation near the truth, for in 1799, the Walmer Castle, by chronometer, measured 1° 06′ W. from the westernmost Barren Island to John de Nova, the interlapsed time being only 1 day, which will place the latter in lon. 43° 9′ E., allowing Barren Island in the lon. already assigned it in this work. A farther corroboration of this lon. may be adduced. The Lord Nelson, in 1802, measured by chronometer 51 miles west from Sandy Island, at St. Augustin's Bay, to John de Nova,* which makes it in lon. 43° 9′ E., for Sandy Island has been already marked in lon. 44° 00′ E.

These three methods of obtaining the lon. of John de Nova, exactly corresponding, make it reasonable to think, that the lon. of this Island so obtained, is nearly correct.

Further description. The Sir Edward Hughes, passed in sight of it in June, 1797, and made it in lat. 17° 04′ S. from noon observation. This ship's journal, states it to be about 1½ or 2 miles in length, with breakers projecting 3 miles from the S. W. side, and nearly the same distance from the N. E. part; and that it is low, and dangerous to approach in the night.

When it bore N. E. by N. about 3 miles, at 11 P. M., H. M. S. Intrepid had no ground 150 fathoms. In passing to the eastward of it at 3 leagues distance, the Lord Nelson had no soundings.

Other accounts, state this Island to be 3 miles long from north to south, with a small elevation at the centre, where it is covered with shrubs, and breakers extending 2 miles from the south end, having a black rock at their extremity.

John de Nova, appears to be the rendezvous of aquatic birds, for there are generally great numbers in its vicinity. It may be seen about 4 leagues from the poop of a large ship, or 6 leagues from the mast-head.

The Scaleby Castle, in company with the Bombay and China ships, passed it on the west side, on the 3d June, 1807. At noon it bore east, *true bearing*, distant 2 or 3 miles, had then no ground 60 fathoms; from hence, she made a *true* north course 1½ mile, and had 2 casts no ground 60 fathoms, steering the same course about ½ a mile farther, she got sound-

* Captain Beaufort, of H. M. S. Woolwich, a very scientific officer, made it in lat. 17° 3′ S., and about 52 miles west from Mohilla by chronometers.

ings 9½ fathoms sandy bottom, the body of the Island bearing then S. 34° E., *true bearing*, distant about 3 miles. From this station, steering N. and N. N. W. about 1½ mile, she carried regular soundings, deepening from 9½ to 15 fathoms, then suddenly no ground 40 fathoms, when about 4½ or 5 miles to the N. W. of the Island. The other ships farther out, had no ground in passing. The Island appears to be only about a mile in diameter, and of a round form (by a plan of it made in the Scaleby Castle) with a reef projecting at least 2 miles to the southward of it, and more than a mile to the N. W. and N. E. of the Island, with discoloured water projecting from the reef at the N. W. end. Captain Loch, thinks that it was on the tail of the N. W. reef, where they got soundings in passing, and advises not to come nearer the Island than 2½ or 3 miles on the west side, there being no danger at that distance.

The observations taken in the Scaleby Castle, made the Island in lat. 17° 5′ S. lon. 43° 2′ E. by lunars and chronometers. Variation 20° W. Captain Loch, thinks it is elevated about 40 feet above the sea, but cannot be seen more than 6 leagues from the mast-head. It is completely surrounded with breakers, and the first *probable* intimation of its proximity that a ship would have in the night, he thinks would be the noise of them.

The other dangers in the Mozambique Channel, nearly mid-way between Madagascar and the coast of Africa, are near the southern entrance; the northernmost of these is the

EUROPA ROCKS, OR SHOAL, seen by the ship of this name, December 24th, 1774. These rocks were seen bearing from S. W. by S. to S. E. by S., distant 2 or 3 leagues; the largest of them appeared about the size of a long boat, and the sea breaks over them at all times, which makes it a very dangerous reef, for there are no soundings until very close to the rocks. The Europa made this reef or shoal, in lat. 21° 28′ S., and 5 miles east of Mozambique, by dead reckoning. Europa Rocks very dangerous.

The Shoal here mentioned is of great extent; it was seen by H. M. S. Norfolk, in 1764, and mistaken for the Bassas de India. This ship made it in lat. 21° 45′ S., which seems more southerly than the truth. From Cape St. Sebastian, she made, by dead reckoning, 4° 20′ E. to the Shoal, but this, and also the Europa's account, would place the Shoal about a degree to the eastward of its real situation, arising probably from the westerly currents these ships may have experienced, during their run from the coast to the Shoal.

The most satisfactory account hitherto obtained concerning this Shoal, is from Captain Huddart, who saw it in the Royal Admiral, 23d of August, 1784. Nothing was perceived above water, except scattered rocks like hay-ricks, though probably some part of the flat may dry at low water; at the exterior part, the sea breaks heavy all round. The pinnace was sent to the back of the surf, and sailed round the south and west sides in from 3 to 12 fathoms, within 20 or 30 yards of the breakers, while the ship kept from about 1 to 1½ mile off them, and had no soundings with 40 to 70 fathoms of line, for an extent of 14 miles on the said south and west sides, but could not ascertain how far it extended to the eastward. The part visible, lay in a direction from E. S. E. to W. N. W. 13 miles, and from N. N. E. to S. S. W. 6 miles. The northernmost extreme of the Shoal, was found to be in lat. 21° 28′ S., and the westernmost in lon. 40° 8′ E. by mean of 12 lunar observations, and by chronometer in 39° 58′ E.* From the known accuracy of Captain Huddart in making observations, and in every thing pertaining to nautical knowledge, the longitude of the Europa Rocks, as observed by him, may be considered nearly correct; but there is reason to think Geo. site observed by Capt. Huddart.

* In a run of 3 days, the Royal Admiral measured by chronometer 22½ miles difference longitude east, from the Europa Rocks to the northernmost of the small Islands on the Coast of Angoxa, in lat. 16° 21½′ S. On the parallel of the Europa Rocks, about 25 leagues from the coast of Madagascar, a reef of rocks is generally placed in the Charts, said to have been discovered by the Sussex, and called by her name; but it is probably the same reef seen in the Europa, and laid down by dead reckoning far to the eastward of its true situation.

that this danger is rather a little to the west, than to the eastward of its position as stated above.

Island Bassas de India.

BASSAS DE INDIA,* though long the dread of navigators, does not seem so dangerous as the Europa Rocks, for it is not a shoal, but an Island about 5 or 6 miles in length north and south, and 3 or 4 in breadth, (by angular bearings taken in the Royal Charlotte, by Captain Joseph Cotton) highest at the northern part, with several small hummocks in other places, and a sandy beach fronting the sea.

The David Scott had soundings 5 leagues from it, but none on a nearer approach.

The David Scott, on June the 4th, 1804, having steered N. E. by N. 4 miles from lat. 22° 38′ S. observed the preceding noon, the Bassas de India was seen from the mast-head at half-past 1 P. M. bearing E. by N. or E. N. E. about 5 leagues. At this time they sounded, and had 2 casts, 55 and 52 fathoms rocky bottom. From hence, an E. N. E. course was steered to get a nearer view of the Island, when at 5 P. M. the N. W. part bore S. 88° E., distant about 4 miles, and the other extreme S. 55° E. After having the 2 casts of ground when the Island was first seen, no more soundings were obtained in standing towards it, and it is thought none are to be had at the distance of 2 and 3 miles from the shore. Captain Jones's journal, describes it to be a low Island with many trees on it, and a white sandy beach all along the west side, without any appearance of shoals or rocks on that side, and that it may be seen from the mast-head at the distance of 5 or 6 leagues in clear weather.

The Europa made 54 miles of easting, by account, from the shoal that bears her name to Bassas de India, which would place it in lon. 40° 57′ E. if Capt. Huddart's longitude of the Europa Shoal, and this ship's run were correct. But Bassas de India is now ascertained to lie farther west, for the lunar observations of Capt. Jones of the David Scott, and one of his officers, made the body of the Island in lat. 22° 28′ S. lon. 40° 34′ to 40° 39′ E. Variation 23½° West.

Geo. site.

Neptune's description of it.

The Neptune, on the 27th March 1812, saw the Island Bassas de India from the mast-head at 10¾ A. M. bearing N. by W. At noon it bore N. 40° W. to N. 70° W. distant 5 or 6 miles, the south end of the Island then bore *true* west, and by good observation that part was found to lie in lat. 22° 26½′ S. lon. 40° 37′ 33″ E. by mean of lunar observations and chronometers, corresponding within 5 miles.

Capt. Rush, of the Royal Charlotte, in company with the Neptune, measured by chronometers 3° 44′ East from Bassas de India to Saddle Island at the west end of Johanna, which is situated in lon. 44° 21′ E., and by this measurement the former Island will lie in lon. 40° 37′ E., corresponding with Capt. Donaldson's longitude of it as stated above, which may be considered as very near the true situation of the Island Bassas de India.

When first seen from the Neptune, it seemed merely a sand bank, but on a nearer view, was found to be covered chiefly with brush-wood, excepting some trees on the north end, which made that part of the Island look more elevated than the rest of it, although these trees were far from lofty.

The east side of the Island, and every part seen by these ships, had a beautiful white sandy beach (or perhaps white coral) with the appearance of being a bold shore, as nothing like a reef or breakers could be discerned.

Although the Island is low, it may be seen about 6 leagues distance from the mast-head; it seemed narrow, and appeared to extend N. N. E. and S. S. W. about 4 leagues. These ships did not sound, as they were sailing at the rate of 9 miles per hour, when passing the Island.

* Named by the Portuguese discoverers, Baxos da Judia, or the Banks of the Jewess; and are still called so by that nation, as well as by all European navigators, except those of our country, where the first charts of these parts copied from the Portuguese, having changed the letter u into an n, substituted the word India, for that of Judia.

It has been already intimated, that mid-passage through the Mozambique channel, seems preferable to that along the Madagascar shore, when ships are certain of the longitude being correct; but caution will ever be requisite, when the parallels of Bassas de India, Europa Rocks, and John de Nova are approached in the night, for a ship might be close to the breakers before they are perceived, particularly in hazy weather, which prevails in this channel. Neither should the African coast be approached close, on account of southerly currents, and baffling winds, often experienced there.

Middle of the Mozambique channel recommended, but caution requisite.

## *COMORO ISLANDS, and DANGERS near them;*

### WITH DIRECTIONS FOR SAILING TO THE ANCHORAGE OF COMORO, MOHILLA, MAYOTTA, AND JOHANNA.

COMORO, the largest of these 4 islands, gives its name to the others, which are Mohilla, Mayotta, and Johanna: they are all very high, and may be seen at the distance of from 14 to 20 leagues in clear weather. The inhabitants are Mahometans, descendants of Arabs incorporated with Africans, and at *present*, they are generally found to be courteous and hospitable.*

Comoro Islands.

Comoro, called also Angazecha, the highest and largest of these Islands, is about 12 leagues in length north and south, and about 5 or 6 leagues broad. The anchorage at this Island is inconvenient, and water not easily procured, European ships, therefore, do not now visit it, though formerly they sometimes touched here for supplies.

Grand Comoro anchorage not good.

The anchorage is at the N. W. part of the Island, said to be in lat. 11° 18′ S., about $1\frac{1}{2}$ or 1 mile to the westward of Muchamahola, the King's Town, opposite to a small sandy beach, but it is not advisable for a ship to anchor under 30 or 35 fathoms water, for in this depth, she will be only distant from the breakers about 2 cable's lengths.

Where to anchor.

This remark was given by Captain Webber, who was there in the Oxford in 1759, and the bearings recommended for anchorage are, the easternmost point of land in sight East, King's Town E. S. E., and the black rocky point S. by W. The Suffolk at anchor in 24 fathoms sandy ground, had the King's Town E. $\frac{1}{2}$ S. distant near 2 miles, the easternmost land E. by N., and a black bluff point, like 2 rocky islands, S. S. W. Captain Mitcham says, a ship may anchor with the easternmost land in sight E. by N., and the black bluff point S. by W. $\frac{1}{2}$ W., but these and the Suffolk's bearings are probably too close for a large ship.

Excepting the anchorage at the N. W. end, the Island is generally steep, having no soundings at a small distance from the shore; there are, indeed, two bays called Ingando and Mooroon, to the northward of the S. W. point, where the bottom is coral, and the depth 35 fathoms within a cable's length of the breakers, but no vessel should anchor there.

The shores of this Island are steep,

If a ship intend to anchor at this Island, she ought to have the boats prepared to tow when the shore is approached, for she will be liable to baffling light airs and calms, the high land obstructing the regular monsoon, and the tides which are strong, may be liable to drift her past the anchorage, if precaution is not taken to counteract their impulse.

and the tides set strong.

The town is large, with many cocoa nut trees, and a sandy beach before it; at low water a boat cannot land, as shoal water extends $\frac{2}{3}$ of a mile from the town, which is the only land-

* The natives of Comoro, appear not to have merited this appellation when the Company's ships first traded to India, for the Penelope had part of her crew enticed on shore, and destroyed by the inhabitants of this Island.

ing place. Steering for the anchorage, a boat should be sent a-head to sound, for the bank is steep, and the distance small, from 35 fathoms on its outer edge to 12 fathoms close to the breakers. Ships may be sheltered here from the southerly monsoon, but it would be dangerous were the winds to blow strong at any time from the north-westward; this, however, seldom happens, particularly during summer, when the southerly monsoon predominates. Bullocks, sheep, goats, and tropical fruits are plentiful, but no water to be procured.

In 1759, the price of bullocks was settled with the king, from 4 to 6 dollars each; and it is prudent to give him a present, when a supply is wanted.

Geo. site. It is high water at 4¾ hours, and the tide rises about 12 feet on the springs. The body of Comoro is in lat. 11° 32′ S. lon. about 43° 25′ E.

Island Mohilla. MOHILLA, at one time was considered, of all these Islands, the best for obtaining refreshments; but the preference, for many years, has justly been given to Johanna, on account of the anchorage being safer than at any of the others. Mohilla is the smallest* of these Islands, situated about 12 leagues S. E. by S. from Comoro, and about 10 leagues to the Geo. site. W. S. Westward of Johanna. The body of it is situated in lat. about 12° 20′ S. lon. 43° 50′ E.

At the south west end, there is said to be anchorage, At the south end of the island, several small Isles are situated, with a coral reef around them, behind which, Van Keulen describes good anchorage; and that there is 8 or 9 fathoms least water, in crossing the coral reef to the eastward of these Isles, where the ground is plainly seen, but no danger. The soundings within the reef, is said to be from 45 to 30 fathoms sandy bottom, where is the anchorage. There is also an anchoring place near the shore, at the north part of Mohilla, and one on the east side, where refreshments may be obtained.

and on the N. and E. sides.

Description of the west and north west sides. Capt. Wilson, of the Suffolk, was at this island in May, 1756, when the lat. observed at noon, was 12° 29′ S., the extremes of Mohilla bore from E. ½ N. to N. N. E. distance from the Islands off the S. W. part of it 5 miles, the high land of Comoro North. They passed these islands at the distance of 4 or 5 miles, and when clear of them, hauled in for the N. W. end of Mohilla; no ground with 40, 50, and 60 fathoms of line was obtained in rounding the And to proceed, Island. About 2 miles short of the N. W. point of the island, there is a black rock always above water, which lies about 2 miles from the shore; in passing this about 2 miles distance, they had no ground with 30 and 40 fathoms. The reef of rocks above water, which projects from the N. W. point of Mohilla about ¼ of a mile, was passed about the distance of 1½ to the anchorage: water and refreshments. mile, no ground 30 fathoms; when clear of the point, and the land opening to the eastward, they hauled in for it, and soon got soundings 30 fathoms, small stones and coral, decreasing to 15 fathoms as the shore was approached. On edging off to 24 fathoms, a small town was seen on a bluff hillock, close to the sea. Having previously sent a boat to examine this place, the Suffolk stood in, with boats a-head sounding, and anchored at 6 P. M. in 24 fathoms, small stones, shells, and coral, then moored with the stream to the northward, in Description of this place, 26 fathoms, off shore ¾ of a mile, the N. W. point of Mohilla bore W. S. W., the easternmost extreme E. by S. ½ S., and the town S. S. W.

The watering place at this town was found to be about 200 yards from the beach, up an easy ascent, but the run of water was in a ravine about 12 feet deep, which seemed to have been formed by the torrents from the hills; this was steep, which made it necessary to fill the casks with the engine; they were then rolled with great ease from the beach, which is soft sand. The run of water is clear, and constant from the mountains, but is lost among the rocks and sand, about 10 yards below the place where the casks were filled, and it was observed to issue from the beach afterward at low water. A reef of rocks extends from the point on which the town is built, across the little bay where the watering place is, to 2 rocks

* It is not so high as Johanna or Comoro; the most elevated part is near the N. W. end.

to the eastward which are always above water; this prevents the boats working the last quarter ebb, and the first quarter flood, as the reef is dry at low water.

It is high water here at 6 hours on full and change of moon, and rises 15 feet: the stream sets along shore, the flood to the westward, but changes before the water has done rising on the ground, as does the stream to the eastward before it has done falling. Mr. Jackson, the second officer, was sent at day-light, 29th, in the pinnace, to examine the coast to the eastward, between this place and the King's Town; he returned next day, and reported that the King's Town is about 4 leagues to the S. E. by S., that the coast between it and where the ship lay is very dangerous, having several reefs of rocks projecting far out into the sea; that a ship cannot lie nearer than 2 miles from the land off the King's Town, that there is a large surf on the shore, and that boats cannot go in after half ebb. The watering place is a mile beyond the town, and is not convenient, there being a chopping sea which prevented the boat's rowing. He landed, and walked about 4 miles farther along shore to the S. S. E., and came to a large run of water, like that at Johanna. The coast appeared very rocky, and being open to the S. E. a large swell came in, and the surf was great on the shore, which would, apparently, make it very difficult to water there. *N. end of the north-east coast.*

Fruit was had in abundance where the Suffolk lay, but only 27 bullocks could be procured, and many of them small. She weighed on June 4th, at mid-day, and the first cast after the anchor was up, was only 15 fathoms, deepening gradually to 40 fathoms, at the distance of about 5 miles from the shore, steering N. N. E. to N. E.; afterward, no ground. *Anchorage on the eastern coast.*

Capt. Mitcham, describes the anchorage on the east side of Mohilla, to be in muddy ground, betwixt two reefs or shoals, when an islet or rock will bear S. by E. ½ E., the southernmost point S. E. by S., and the westernmost point in sight, low and flat with some trees on it; and a reef of rocks dry at low water N. W. ½ N. distance 3 miles. The King's Town is near this point, but ships cannot anchor there, by reason of foul ground.

Since these observations were made, about 50 years ago, at Mohilla and Comoro, the variation of the compass has not essentially changed at these places.

The Winchelsea, in 1762, anchored in 22 fathoms, on the north side of Mohilla, about ½ a mile to the eastward of a place where she watered; Johanna bore from E. 9° S. to E. 27° S., south part of Comoro N. ¼ W. to N. 21° W. and Mohilla the N. N. E. point, called Cocoa-nut Tree point, S. E. distant 4 or 5 miles, the N. N. W. point West, distant 3 miles; the lat. observed on shore at the watering place, 12° 13′ 30″ S. The bottom was rocky, as the cable was injured, and the hawser cut in two. *N. and north coast.*

In 1749, the Warren, Capt. Glover, lay some time within the Isles that are off the south part of Mohilla.

MAYOTTA, the easternmost of the Comoro Islands, and Johanna bear from each other about E. S. E. ¼ S. and W. N. W. ½ N. true bearings; the breadth of the channel, between the N. W. end of the former, and the S. E. end of the latter, is about 12 or 13 leagues. On the south part of Mayotta, there is a sharp conical mountain, called Valentine's Peak, which makes it easily known. By selecting a number of observations, made by different navigators, this Peak appears to be in lat. 12° 54′ S., and in lon. 45° 14′ E. The Island lies in a direction from S. S. E. to N. N. W., the southern extremity being in lat. about 13° 5′ S., and the N. W. part where is the anchorage, in lat. 12° 42′ S. This Island is completely surrounded by a coral reef, at the distance of 3, 4, and 5 miles from the shore in some places, (having smooth water within it,) which prevents ships from anchoring here. There is, however, an opening in the reef at the north part of the island, leading to a place of anchorage, which has been frequented by English ships in former times, when they wanted refreshments; or when this Island happened to be mistaken for Johanna, which has sometimes been the case. *Island Mayotta. Geo. site. Surrounded by a reef; but has anchorage at the N. W. end.*

Description of the channel and road; A Saddle Island, like that of Johanna, is situated at the N. W. end of Mayotta, which is thought to have occasioned the mistake here mentioned; between Saddle Island and the reef to the eastward of it, the channel is formed which leads to the anchorage, having deep water in the east side, near the sunken reef; but, toward Saddle Island, there are only 5, 6, and 7 fathoms, on a spit projecting to the N. E. and Eastward of it. Within this Island, the depths are from 16 to 30 fathoms in proceeding to the anchorage near the town,

and to proceed into it. which is about 4 or 5 miles south-eastward from the Island, and abreast a bluff headland with rocks overhanging the sea.

It is high water here on full and change, at $5\frac{3}{4}$ hours; the rise of tide 11 or 12 feet. Variation off Mayotta in 1798, was 17° 36′ W. To the southward and S. W. of Saddle Island, reefs of breakers extend 4 or 5 miles from the shore.

The channel leading to the anchorage, at the N. W. end of Mayotta, being imperfectly known, not having been frequented by English ships these last 50 years, it would be prudent for any ship, intending to touch there for refreshments, to keep boats sounding a-head, until she reach the anchorage, which is in 26 and 28 fathoms, sandy bottom.

General remark. Ships are frequently liable to calms and light winds near these Islands, particularly at the changes of the monsoons, when the currents are also variable. Should a ship be carried to the eastward of Mayotta, at such times, by the current, care will be requisite to avoid a

A reef said to be eastward of Mayotta. reef, said to lie near 4 leagues off shore. When the north point of Mayotta bore N. W. by N. by compass, and the south point S. W. by W. 6 or 7 leagues, this reef bore N. W. by W. distant 2 leagues. This reef appears to have been seen by the Devonshire, 10th December, 1766, at 4 P. M. when Mayotta bore from S. by E. to W. S. W., the 3 small isles off its north end from W. S. W. to West, distant from the nearest shore 3 leagues, breakers were then seen from the mast-head bearing N. W. by N.

Island Johanna is much frequented. JOHANNA, OR ANZUAN, is now more frequented by European ships, than any other place of refreshment in the Mozambique Channel; it is higher than Mohilla or Mayotta, though not so much elevated as Comoro. The mountain, called the Peak, has not this appearance in every view, but is rather of an oblong form, and situated near the east part of the Island. This Peak, or summit of the highest mountain, is in lat. 12° 15′ S. and

Geo. site. lon. 44° 34′ E. by mean of lunar observations, taken in 10 different ships, at various times. The south extremity of the Island is in lat. about 12° 25′ S., and the anchorage of the bay, is on the north side, in lat. 12° 7½′ S., lon. 44° 30′ E. The Island is of a triangular form, with rocky reefs extending from its extremities; and from the S. W. to the N. W. point, the shore is bounded by a reef, at the distance of 2 miles from it in many places. Ships, therefore, should not in light winds, come too near the southern shore of this Island, in case of a

How to steer for the anchorage. calm ensuing, and the current or swell drifting them on the reef.* But they ought to steer direct for the N. W. point, near which a small Island (from its form called Saddle Island) is situated, and connected to the main Island by the reef already described, which extends to Saddle Island, and projects around it to a considerable distance. This Island should not be passed nearer than 1½ mile, as the foul rocky ground extends from it about a mile on the north side, and is steep to, having no soundings with 20 fathoms close to its outer edge. If a ship happen to pass so near as to have soundings on the verge of the foul ground off Saddle Island, she ought to edge away to the northward immediately, for it is dangerous to make free with this foul ground or reef, there being great overfalls and shoal water on its outer verge; and farther in, it is nearly dry at low water spring tides. When past Saddle Island, which is the N. W. extremity of the bay, she should steer along to the anchorage, hauling up gradually for the shore, on account of the reef, which extends from Saddle Island

* The Brilliant, in 1782, drifted toward the shore, and was wrecked on the reef, at the S. W. part of the Island, and several other ships, with great exertion, have been towed clear of it by their boats, when becalmed near the S. W. side of this Island.

about 4 miles along shore to the eastward; and the shoal water on it, is generally visible. When thus far advanced, the sudden gusts, which often blow from the hills, make it prudent to keep well in with the land in sailing to the anchoring place, which is about 3 or 4 miles to the westward of the town, abreast a range of cocoa-nut trees, called Brown's Gardens, near the sea; and having a large black rock to the eastward, betwixt them and the town, with the rivulet where the water is procured at their western extremity.

Farther directions.

Captain Moffat, who in 1814, made a survey of the bay of Johanna, says,—care should be taken not to make too free with the shore, after luffing round Saddle Island. It may be approached very close in some parts, but 1½ mile distance is sufficiently near *to venture*, for in several places, coral rocks extend out to a considerable distance. This is the case to the eastward of the Black Rock, also to the westward of the fort. Be on your guard, by having your ship under proper sail for working, as flurries of wind often blow from the land; and when you approach near the Black Rock, luff in if you can, and get soundings, and be ready to tack if you cannot fetch into the anchorage. Keep the deep sea-lead going, when standing in toward the shore, with the hand-lead also ready. Have the boats ready to tow, in case it should fall calm, as they may often be found very useful.

Best anchorage and watering place.

The most convenient situation to moor, is abreast the rivulet bearing S. by W., with the peak S. by E. ½ E., the Mosque East, and the extremes of the bay N. E. Easterly to N. W. by W.* In this situation, with the inner anchor in 10 fathoms, a ship will be a ¼ mile or more from the shore at low water, and a line of light cordage may be extended from the ship to a small anchor or grapnel near the shore, to conduct the boats on board with water, and they may haul off to the anchor by a rope placed from it to the shore. The anchorage here, is good holding ground. There is another watering place, with good anchorage off it, some distance to the westward of the Black Rock, and Brown's Gardens; and a third watering place near midway between the Black Rock and the town.

Watering places.

And the shore rocky between them and Brown's Gardens.

There is a fourth place where water comes through the first cocoa-nut tope to the eastward of the town, but the anchorage before the town being very indifferent, it is not frequented; for here, with the outer anchor in 25 fathoms, and the other in 7 fathoms, a ship will not be distant from the shore above 2 cable's lengths at low water.

Between Brown's Gardens and the Mosque Town, there is a reef of rocks projecting from the shore near a ¼ of a mile, dry at low water. Having anchored at high water, a ship may appear to be at a proper distance from the shore, but the declivity from the beach at this part being very gradual, and the rise of tide considerable, she may at low water when the rocks appear, be found to have anchored very near them; the best birth is, therefore, abreast the proper watering place, already mentioned. In some journals, the tide is said to flow 3 hours at full and change, and rises 8 feet perpendicular.

Tides.

Water and other refreshments are good.

At the eastern extremity of the Bay, a reef of sand and coral, lines the shore along the N. E. part of the Island, having deep water on its outer edge.

The water at Johanna is excellent, but wood is a scarce article. The bullocks are small, weighing 300 or 350 lbs. each, but the meat is good. Goats, kids, and poultry, may also be procured at high prices. On the whole, this is a proper place for obtaining refreshments, or restoring to health a scorbutic crew, for the Island abounds with cocoa-nuts, limes, oranges, plaintains, and other tropical fruits; yams and sweet potatoes, may also be procured.

A caution.

As the wind blows from the hills and valleys in variable gusts, it is prudent to bring a ship under proper sail on approaching Saddle Island, for hauling close to the wind, or for tacking, should that be requisite before she reach the anchorage.

* The Cirencester abreast the watering place, at anchor in 16 fathoms, had the extremes of the Bay from N. E ½ N. to Saddle Island W. N. W., and the town E. ½ N, off shore ½ a mile.

The natives are hospitable, but they possess a considerable degree of low cunning, and some of them are addicted to theft.

In November the weather is precarious, heavy rains are expected here at this time, with the changing of the monsoon, which generally happens about the middle of the month; the northerly monsoon then commencing, it is considered not perfectly safe to remain in Johanna Road during these northerly winds, which may at times be liable to blow strong. The currents are variable about this Island, particularly at the change of the monsoons, but their general course is to the S. Westward.

Monsoons.

DANGERS *probably* existing in the vicinity of the Comoro Islands are the following;—

Banks to the east of Mayotta.

A Bank on which the Devonshire, 10th September, 1766, at 11½ P. M. had from 17 to 20 fathoms coarse sand, with red and black specks, when she wore immediately, and soon lost soundings steering N. W.

On the following noon, they observed in lat. 12° 45′ S. with the Island Mayotta bearing from S. by W. to W. by N., distant about 4 leagues, from which computing her course and distance made good, will place the Bank above mentioned in lat. 12° 18′ S. and 60 miles east from the eastern part of Mayotta, which Captain Mercer supposed to be the Bank discovered by the Firebrass in 1682. But the Firebrass Bank, is sometimes placed about 16 leagues to the eastward of Mayotta, in lat. 13° 16′ S. Another bank or shoal, was placed about the same distance S. S. Eastward of Mayotta in the old charts. Ships that pass to the eastward of this Island, ought to keep a good look out, as there possibly may be dangers on some of these *doubtful* banks, situated between it and Madagascar, which are not yet ascertained.

and near Comoro.

Near Grand Comoro, a shoal or bank is placed by the Portuguese, distant 3 leagues from the S. W. point of Comoro; it is said to be 5 or 6 leagues long, N. W. and S. E., having 6 fathoms on the south part, and 4 fathoms on the N. W. part, at half flood.

A reef of breakers, about 8 or 10 leagues to the westward of Comoro, is said to have been seen in the Devonshire, 1764, and appeared to extend N. E. and S. W. about 2 miles in length.

Doubtful shoals.

These seem to be very doubtful, as many ships have passed to the westward of Comoro without perceiving any appearance of danger.

St. Lazarus Bank.

ST. LAZARUS BANK, in lat. about 12° S., said to be 12 or 14 leagues to the eastward of the Querimbo Islands, is very little known, although several ships have sounded on it. The Dorset had soundings of 12 to 18 fathoms on it in 1737, in lat. 11° 56′ S. and 1° 10′ E. from the main, and the south part seemed very shoal. The Edgecote, had 10 and 12 fathoms on it in 1757, in lat. 12° 4′ S. and 1° 12′ E. from Querimbo; and the Raymond in 1784, in lat. 12° 13′ S., about 33 miles east from Cape Delgado, had soundings on it. The soundings obtained on it by these ships, seem to have been from 9 to 50 fathoms; but the extent of this Bank, its real distance from the adjacent coast, and from Comoro, and whether any part of it is dangerous, remain imperfectly ascertained.

The Portuguese describe it to be dangerous. The Kaunitz, Imperial ship, in 1791, is said to have seen breakers from the quarter-deck bearing east distant about 3 leagues, when the land was visible to the westward, about 11 leagues distance. Mr. Osborn, 1st officer of that ship, made the lon. of this shoal 42° 25′ E. by lunar observation, and the lat. is said to be 11° 3′ S.; although this lat. does not agree with that assigned to the St. Lazarus Bank, they are considered by some as the same shoal.

Little Comoro.

LITTLE COMORO, a doubtful Island, is now thought to have no existence; it was placed in the old charts in lat. 10° 20′ S. and on the meridian of the north end of Comoro.

# *PASSAGE from the COMORO ISLANDS, towards INDIA.*

## ADJACENT ISLANDS, AND SHOALS.

WHETHER BOUND TO THE RED SEA, the Persian Gulf, or to India, it seems improper to proceed through the Mozambique Channel after September, on account of light baffling winds and strong S. W. and Southerly currents, which frequently prevail in October and November among the Comoro Islands. The Essex, bound to Bombay, got the winds from northward, 15th September, 1791, and reached Johanna the 28th. She left this Island October 3d, and the day following was carried to the westward of Comoro by the current, which drifted her almost close to the rocks during the night when calm; it was then deflected by the bluff rocky shore, by which she was swept round a point of the Island, and had no soundings, although the boat lay upon a rock where the water was shoal, at a small distance in shore. From hence she had S. E. winds to the equator, and crossed it the 15th, S. W. and Westerly winds then prevailed, till in lat. 6° N.; N. N. Westerly winds followed, till in lat. 10° N., on the 27th; she had N. N. E. and Northerly winds afterward, until her arrival at Bombay, the 17th November.

The Mozambique channel not advisable after September, for ships outward bound.

Essex went through it late in the season.

H. M. S. LEOPARD, Commodore Blankett, bound to the Red Sea, anchored at Johanna October 29th, 1798; the Dædalus, saw the Island Mayotta on the same day, but did not reach Johanna Road till the 5th November, owing to light winds and southerly currents. They sailed on the 11th, had light variable winds, made the coast of Africa on the 24th, in lat. 0° 44′ N.; the current began to run strong to the southward along the coast, sometimes more than 2 miles an hour during the time they continued to beat against it and the N. Easterly winds, which was until the 14th February, 1799, without gaining ground. During this period, they were generally within 30 miles on either side the equator, and kept near the shore. Provisions began to fail, and the Dædalus was dispatched, 14th January, to the Cape of Good Hope, after transporting most part of her provisions to the Leopard. This ship, with the Orestes sloop in company, continued to beat without effect till the 14th February, when they bore away to Zanzibar to procure provision and refreshments, and arrived there on the 20th. They sailed again on the 5th of March, coasted along to the northward, and had now the current generally favorable, but the wind often contrary. Continuing to coast along shore, they passed Cape Gardafui, April 8th, and anchored the 11th, in Aden Road.

Leopard long perplexed on the African Coast.

THE ASCENSION, was close to the Comoro Islands, late in October, 1608, and had stormy weather in the southern part of the Mozambique Channel; she touched at the Island Pemba on the African coast to obtain refreshments, but was obliged to leave it by the perfidy of the natives, who appeared friendly until some of the crew were enticed on shore, and then assaulted them. After leaving this place, she continued to beat at sea until she fell in with a group of uninhabited Islands,* abounding with cocoa-nuts, and other refreshments. The contrary winds continued till late in March, which prevented her reaching Aden Road before April.†

Passages from the Mozambique Channel to the Arabian Coast against the N. E. monsoon.

* Probably some of those in the Seychelle Archipelago.

† Captain Saris, with the Clove, Hector, and Thomas, left Mohilla, in November, 1611, made the coast of Melinda in December, and were carried back to 5° S. by the currents. They made Cape Bassas, January 1st,

THE MARY, Capt. Oyles, from England, bound to the Gulf of Persia, left Table Bay at the Cape of Good Hope, 15th August 1694, saw the Coast of Natal in lat. 29½° S. on the 7th September, having experienced a current of 180 leagues to the westward, from leaving Table Bay. She had light winds and southerly currents in the Mozambique channel, watered at Johanna, sailed from thence on the 4th November, had variable light winds and calms, passed between the African Isles and those of the S. W. part of the Seychelle archipelago on the 6th December, then stood to the eastward on the south side of the Island Seychelles and those near it, left the eastern edge of the bank on the 21st December, and steered East and N. E. for a few days with variable winds between North and S. W., which veered to N. E. and East when near the equator; steered then between N. N. E. and N. N. W., making a tack to the eastward at times. Saw the east end of Socotra on the 16th January 1695, having experienced 140 leagues of westerly current from leaving Johanna, saw the Coast of Arabia near Cape Chansley on the 20th, had here land and sea winds from N. E. to S. E., which drew to the southward when off Cape Isolette, with which, rounded the Island Mazeira on the 30th, made an occasional tack at times, passed Ras-el-had 1st February, and arrived at Gombroon on the 18th.

A remark. These ships, so late in the season, ought to have avoided the Mozambique channel and the African coast. Had they proceeded to the eastward of Madagascar, and between Diego Garcia and the Seychelle Islands, the Essex would probably have reached Bombay more speedily; and the others destined for Aden and the Red Sea, by following the same route, then keeping within a few degrees of the western limit of the Maldiva Islands until they had reached the 6° or 7° of N. lat., and met with N. N. Easterly winds, there is reason to think their passage would not have been very tedious.

Latham's Shoal. LATHAM'S SHOAL, OR SANDY ISLE, discovered by the ship of this name, 8th Dec. 1758, is thought to lie about 14 or 15 leagues from the south end of Zanzibar, in lat. 6° 57′ S. This shoal bore at noon N. E. by N. 4 or 5 leagues, and land supposed the Island Zanzibar, from W. by N. to N. W. by W., distant 10 or 11 leagues, lat. observed 7° 14′ S. Captain Foote's journal, describes the shoal to be a sand bank, about 14 feet above water, with rocks around it, and high breakers. It extends N. E. and S. W. about 2 miles, having a rocky point, projecting about ½ a mile from the sand bank to the eastward. The journal states it to be in lat. 7° 00′ S. from noon observation, but no allowance was made for dip of the horizon, or for the correction of the declination for the longitude in. From noon she steered S. by W. 14 miles, and S. by E. 8 miles to sun-set; the Island Monfia then was seen bearing S. by W., distant 8 or 9 leagues. Variation 19° W.

Bassas de Patram, doubtful. BASSAS DE PATRAM, is a doubtful shoal, for there is no satisfactory account concerning it, except that given by Capt. Wilson, of the Pitt, should be considered as such. His journal states, August 16th, 1758, that breakers were seen from the mast-head, bearing from E. by N. to E. N. E. distant 5 leagues, supposed to be the Bassas de Patram. He made them in lat. 4° 30′ S. and 50 miles E. of Comoro by *account*.

Bassas de Amber is very little known. BASSAS DE AMBER, thought to have been seen in H. M. ships Norfolk and Panther, May 17th, 1760, on their passage from Johanna towards India: the sand was visible in several places, and the bank appeared about 9 miles in extent. They made 5° 49′ mer. distance east from Johanna, and the lat. about 0° 9′ S. It is sometimes placed in 51° 50′ E., whereas, the run of these ships from Johanna, would place it in lon. about 50° 30′ E. The

1612, had strong easterly winds here, and southerly currents; but more to the southward, light airs and strong ripplings, when they stood out to seaward. From Cape Dorfui (which they made early in February) they stood out to sea, and saw it again 8 days after, owing to westerly currents, and arrived at Tamarida Road, in the Island Socotra, having a passage of 14 weeks from Mohilla, against the monsoon. These ships made a passage by keeping mostly out from land, while the Leopard could not effect it along the coast.

Huddart, in Aug. 1803, saw the *appearance of* broken water, which they supposed might be the Amber Shoal, lat. then 0° 5′ S. lon. by chro. 48° 50′ E. But probably neither this, nor Bassas de Patram really exist.

DEPARTING FROM JOHANNA, towards India, a course about N. N. E. is proper to the parallel of 8° S. lat., to avoid falling in with the Aldabra Islands, and in crossing their latitude, a good look-out is requisite. From the parallel of 8° S. a course more easterly ought to be steered, to cross the equator in lon. 53° or 54° E., taking care to avoid Alphonse Island near the parallel of 7° S. lat., and the African Islands near the 5th parallel of south latitude. By crossing the equator well to the eastward, the situation assigned to the Amber Shoal will be avoided. To sail from the Comoro Islands toward India.

In running from the Comoro Islands to the equator, during the southerly monsoon, the winds generally prevail at S. S. Eastward, increasing in strength as the latitude is decreased; and they veer to S. S. W. and S. W. in north latitude.

From the equator, a ship bound to Bombay, may steer a direct course for that place, taking care to get on the parallel of the Island Kanary, at a considerable distance from the coast, and then steer directly east for it. In steering east for the entrance of Bombay Harbour, the soundings denote the approach to the land. On the parallel of Kanary, at the distance of 40 leagues to the westward, the depths are from 52 to 60 fathoms; at 20 leagues distance, 46 and 48 fathoms; at 10 leagues distance, 36 or 37 fathoms; and 5 leagues west from it, 19 or 20 fathoms. How to approach Bombay.

At the conclusion of the southerly monsoon, a ship leaving the Comoro Islands, should steer more easterly than during the strength of the southerly winds, to counteract the prevailing westerly currents.

If bound from the Mozambique channel, or from Mauritius, to the southern part of the Malabar Coast, or to Colombo, near the close of the S. W. monsoon, a ship may steer a course from the equator to pass through the Eight or Nine Degrees' Channel; but if bound to the south part of Ceylon or the Coromandel Coast, the One and a Half Degree Channel seems preferable, being more direct, and equally safe as the former. Channels that may be chosen.

In passing through the 9° Channel in thick weather, and uncertain of the exact latitude, should a ship see the Island Minicoy, she may pass on either side of it as seems most expedient; but great caution is requisite in approaching any of these Islands in thick weather, or in light winds, for they are all very low, with extensive coral reefs contiguous to them; close to which, there are no soundings.

If this channel is adopted by a ship bound to the Coromandel Coast, and certain of being to the eastward of Minicoy, a direct course may be steered for Point de Galle: if uncertain of the longitude, she ought to steer to the eastward, until soundings are obtained on the bank adjacent to Cape Comorin, any where between lat. 8° 04′ N. and 9° North. The depths are from 45 to 50 fathoms 8 or 9 leagues off the coast, at which distance the high land will be easily seen in clear weather; but the weather being generally hazy during the S. W. monsoon, the land is seldom visible until near it; a course, therefore, must be steered to the southward, so soon as soundings are obtained. In steering from Cape Comorin for Point de Galle, a course should be adopted to place a ship in the latitude of the latter, at a reasonable distance from it, for the current at times sets into the Gulf of Manar; and near Point de Galle, the wind is sometimes at S. S. Westward, which might cause considerable delay were a ship not able to round the S. W. extremity of Ceylon.* Should a ship's position be correctly known by lunar observations or chronometers, or any of the Islands be seen in passing through either the 8° or 9° Channel, there will be no cause to steer for soundings off Cape Comorin, but a direct course may be adopted for Point de Galle. To steer for Ceylon.

* Many ships from England, bound to Madras, got into the Gulf of Manar about a century ago, in the strength of the S. W. monsoon, sometimes falling in with Manapar Point, or the land near Tutacorin; but their journals shew, that by making a few tacks, they all got round Ceylon without difficulty.

# *SOUTH COAST of AFRICA, from CAPE AGUILHAS to ALGOA BAY;*

## BAYS, HEADLANDS, AND SAILING DIRECTIONS.

Bays of South Africa.

THE BAYS ON THE SOUTH COAST OF AFRICA, are mostly open to S. E. and Easterly winds, seldom visited by large ships, except in exigent cases, but small vessels from the Cape, frequent several of these Bays to procure timber.

From Cape Aguilhas, Cape Infanta bears about E. N. E. ½ N. *true* bearing, distant 18 leagues; the coast between them is low, and sandy in some places near the sea, extending

Struy's Bay.

from the former Cape, in a circular direction to N. Eastward, by which Struy's Bay is formed to the eastward of that cape; being open to easterly and southerly winds, and the coast around sterile, this bay ought never to be entered by any ship voluntarily, as may be seen in a preceding section, where the Cape and Bank of Aguilhas are described.*

St. Sebastian Bay.

ST. SEBASTIAN BAY, is formed on the north-side of Cape Infanta, the land turning sharp round from this cape to the N. W. then taking a circuit to northward and eastward, forms the bay, which is open to southerly and easterly winds, and not frequented: the coast around this bay has deep water near it, and seems clear of danger; about 2 leagues off shore, the depths are 36 and 38 fathoms. At the bottom of the bay, to the N. W. of Cape Infanta, there is a valley between the mountains, through which Infanta River descends to the sea, and there is said to be good anchorage off the entrance of the river, where a ship might be sheltered from N. W. and Westerly winds, but there is generally a considerable swell tum-

Geo. site of Cape Infanta.

bling into this bay. Cape Infanta, the southern extreme of St. Sebastian Bay, is of middling height, with sand downs over it, having an arid appearance; the lat. of this cape is about 34° 35′ S. lon. 20° 54′ E. To the northward of the Bay of St. Sebastian, there is a flat table hill, and further to the N. eastward, a mountain with a hummock on it, resembling a cupola.

From St. Sebastian Bay, the coast extends nearly on a parallel to Cape Vaches, the distance between them about 23 leagues: in this space, the coast is high, and has a regular appearance.

FLESH BAY, in the vicinity of Cape Vaches, in lat. about 34° 23′ S., was sometimes entered by the early Dutch Navigators, where they got water, bullocks, and other refreshments. There is said to be a reef projecting from Cape Vaches, and an island near the shore at the bottom of Flesh Bay.

Mossel Bay.

MOSSEL BAY, has been called also the Bay of St. Blaze, or St. Bras, and from the similarity of the plans, it seems to be the bay mentioned above, although they differ consi-

Geo. site of Cape St. Blaze.

derably in latitude, as represented by the Dutch plans. Cape St. Blaze, in lat. 34° 10′ S. lon. 22° 18′ E. is the southern extreme of Mossel Bay, situated 7 or 8 leagues north-eastward

How to sail into the bay.

from Cape Vaches. There is a reef off Cape St. Blaze, at the distance of a short ½ mile to

* This bay is about 2½ leagues wide, between Cape Aguilas Point, and the first low point to the N. Eastward. Betwixt the latter point and Cape Infanta, the coast forms an extensive concavity. The Arniston transport, from Ceylon bound to England in 1815, being wrong in their reckoning, and thinking they were to the westward of the Cape, edged away to the N. W. for St. Helena, and got into Struys Bay during a strong southerly gale; not being able to ride at her anchors, she drove on shore, and out of upward of 300 persons, only 5 or 6 survived that catastrophe.

the S. Eastward, on which the sea generally breaks; it is steep to, on the outside, and between it and the cape there is a narrow channel, with 5 fathoms water. The western reddish bluff, kept open of the craggy point, (which is about $\frac{3}{4}$ of a mile to the westward of the cape) bearing W. by N. $\frac{1}{4}$ N. will lead a ship about $\frac{1}{2}$ or $\frac{3}{4}$ of a cable's length clear of the reef in 16 or 18 fathoms, and when the cape bluff is brought to bear W. N. W. she may haul directly into the bay, and anchor in any situation thought convenient, the soundings being regular over a sandy bottom. Anchorage, &c.

Seal Island, is near the shore in the west side of the bay; when it bears N. W. by W. the corn magazine (a long white stone building) S. W. by S. and the outer point South, a ship will have a good birth in $7\frac{1}{2}$ fathoms water, distant from the shore nearly 1 mile.

Water may be conveniently got near the landing place, which is on a sandy beach, at a cove or small bay, near the point Holders. There is another small bay about $\frac{3}{4}$ of a mile to the S. E. of it, where the landing is most convenient when there is a great swell.

Mossel Bay is open to the wind from south to east, and when blowing fresh from these points, a great swell rolls in; the S. E. gales seldom blow more than 24 hours at a time, and generally moderate in the evening.

Several brackish rivers fall into this bay, none of which will admit a boat. Near the shore, brush wood is only to be had, but a little way up the Great Brack River, there is plenty of large timber.

Beef and mutton may be procured at moderate prices, but vegetables and fruit are scarce. Fish are plentiful near Seal Island, and oysters may be got on the rocks and reefs about the Cape. The farmers here, supplied formerly a considerable quantity of grain for the consumption at the Cape of Good Hope, but the cultivation of this article is now neglected.

The tide flows to 3 hours on full and change of moon, and rises 6 feet perpendicular, variation 27° 54′ W. in 1797. The bearings, here mentioned, are *magnetic*.

From Mossel Bay to Seal Cape, or Cape Delgado, the distance is about 23 or 24 leagues; the coast between them lies nearly east and west, (true bearing) extending a little to the southward of the parallel of 34° south lat. It is a bold coast, the land generally of moderate height near the sea, and mountainous inland. Coast to Cape Delgado.

KNYSNA, OR NYSNA RIVER, situated about 20 miles to the westward of the entrance of Plettemberg Bay, is formed between 2 perpendicular rocky headlands, and it looks like the entrance of a large dock when viewed from seaward. Knysna River.

Captain Callandar, and Captain Waterman, who went from Plettemberg Bay to inspect it, have forwarded to me the following description of this place.—

During a heavy gale at S. E. with a high sea at the entrance of the Knysna, no danger was perceived, except some rocks on the east side, and by keeping nearest the west side, a ship not drawing more than 20 feet, *might* have a *fair chance* of getting in safe, as there seems to be only a small spot at the entrance, with so little as $3\frac{1}{2}$ fathoms water. When entered in between the heads, the depths are 6 and 7 fathoms, but it is necessary to have a boat ready with a small line to run out to the rocks, in order to steady the ship. The distance across in the middle is about 60 or 70 fathoms, and there is no rocks but what are visible: after you get inside the river, there is room enough for about 30 sail of ships, and should a ship require to be hove down, this may be done by the beach, as the shore is steep.

But a ship ought not to attempt to enter this place, unless she be in danger, and not able to keep off shore; in such case, if the attempt is made, and the ship should strike at the entrance, the lives of the crew will probably be saved, because you feel little or no wind after entering between the heads, although it blow strong outside.

There is good anchorage outside, gradually decreasing towards the entrance.

Knysna River is contiguous to fine forests of timber, which might be procured and ship-

ped here, with more facility than at Plettemberg Bay, where the small vessels are sent from the Cape to procure this article: vessels might easily be built in the Knysna.

Plettemberg Bay.

PLETTEMBERG BAY, is the Muscle, or Formosa Bay, of the old charts; it is formed by the projecting Peninsula, called Seal Cape, or Cape Delgado, which is the southern extreme, and may be easily known by a gap in the land, about a mile to the westward of Seal Hill, which gives the Cape the appearance of an Island, when viewed from the southward at a few leagues distance.

The only danger in approaching the Bay, is the Whale Reef, a circular shoal of rocks bearing S. E. by E. *by compass* from the Cape, near 1 mile distant; the sea in general breaks over it very high, and between it and the Cape there is a channel, in breadth about ¾ of a cable's length, with 9 fathoms, the least water. This channel should not be attempted but in case of necessity, as there is generally a great swell, and when it blows strong, the wind is unsettled and baffling near the Cape. By giving the Cape point a birth of a large mile, ships may pass safely to the southward, and round the east side of the Whale, which is steep, having 18 fathoms water about ¼ of a cable's length from it; and when the south end of the long sandy beach is open with the high rocky point on the north side of Seal Hill, they are to the northward of the shoal, and if the wind permit, may haul close into the bay. The common anchorage is in 17 or 18 fathoms water, about ¾ of a mile from the governor's store houses, bearing from them S. by E. ¾ E. which is convenient for taking in timber; but by bringing the Cape to bear S. by E. ½ E. and the gap S. W. a ship will be in 8¾ or 9 fathoms water, good ground, and more sheltered.

To sail into it.

Anchorage.

Geo. site, &c.

Cape Delgado, the southern extremity of the bay, is in lat. 34° 6½′ S. lon. about 23° 48′ E. the variation 27° 12′ W. in 1797. From the extremity of the Cape, the bay extends about 5 miles to the westward, sheltered from all winds, except those at S. E. and Eastward. The wind from E. S. E. to S. S. W. sets in a great swell, but S. Easterly gales are of short duration here, as at Mossel Bay. The landing place is on a sandy beach near the governor's store-houses, at the south-end of which, there is a small river that descends from a farm at the distance of 1¼ mile, the entrance of which is generally closed with a dry sandy bar. At both ends of the beach, rocky points project, and from the S. point E. S. E. 1 cable's length, are some rocks dry at low water, which break off the sea. Wood may be cut near the landing place; watering is difficult, as the casks must be rolled near 300 yards over a heavy sand, and then rafted through the surf, which frequently runs high. Beef and poultry may be had at reasonable prices; vegetables are scarce; fish are plentiful near the Cape, and about the rocks off the landing place. Vessels from the Cape load timber at this bay, for 12 miles to the N. W. of the landing place there is a forest, where various sorts of timber may be had; some of large dimensions, proper for either house or ship building.

The tide flows to 3h. 10m. on full and change, and rises 5 or 6 feet perpendicular; a strong current at times sets out of the bay, between the Cape and the Whale. Several brackish rivers fall into the north side of this Bay. Around Plettemberg Bay the land is hilly, and inland to the northward, there is a mountain of an irregular shape, called Buffalo Mountain, the highest part of which is to the eastward. About a degree to the eastward of Buffalo Mountain, there is inland, another of a sharp conical form, called Peaked Mountain; 9 leagues farther eastward, there is a table hill, called Flat Mountain; and between these a round hill, called Round Mountain, or Grenadier's Cap; all of which, are at a considerable distance from the sea.

Mountains near the coast.

From Plettemberg Bay, the coast diverges a little southward from the *true* east point, to the distance of 30 leagues, being generally of middling height near the sea, and destitute of any places of shelter, the depth 60 fathoms about 5 leagues off shore.

St. Francis Bay.

ST. FRANCIS BAY, called also (Kromme) Crooked River Bay, has been visited by some ships in distress. The Pigot got water and other refreshments there in June 1785;

and the Countess of Sutherland remained in it, (after losing her masts at sea) from July 18th to August 17th, 1801; while she continued at this place, had frequent land and sea breezes, with strong winds at times from S. E. blowing into the bay, rendering her situation very dangerous, for the cables were much injured, and some of the anchors were broken by the rocks, although she moved from 10 fathoms on the east side, to 7 fathoms on the west side of the bay, to endeavour to get better anchorage. A little to the eastward of the entrance of the river, the Pigot found a spot of 7 fathoms, sandy bottom, where she moored at a large mile distant from the shore, the eastern extremity of the land in sight bearing E. 10° N. *true* bearing, and a round mount in one with the entrance of the river, which is the best situation to moor. Anchorage.

Crooked River is the only landing place, and that not always practicable, on account of the high surf; the most water on the bar at high water, is 7 or 8 feet on the springs. The tide flows to 5 hours, 15 minutes, on full and change of the moon, and rises 5 or 6 feet. In the river the water is brackish, but about a mile up, there is a spring on the larboard shore. A boat should be anchored outside of the surf, and the casks hauled through it by ropes to her, when filled and brought down the river.

The Countess of Sutherland, had her long boat stove, which was hauled on shore to repair, but she buried in the sand, and could not be extricated.

Bullocks and other refreshments may be procured in this bay; it abounds with fish, but is much exposed to southerly and easterly winds, and the ground being generally rocky, it ought not to be chosen as a place of refreshment, except in a case of necessity. From the south-west point of the bay, a reef of high breakers projects out to a considerable distance, with deep water close to it, which point is in lat. 34° 14′ S. lon. about 25° East, and is called the Cape of Mountains by the French, although it is not high land; but on the same meridian, about 7 or 8 leagues inland, there is a remarkable rugged piece of high land, the flat and round mountains, already mentioned, being 12 or 14 leagues to the westward of the bay. Geo. site and Mountains near it.

From Crooked River Bay, the coast lies nearly in the direction of the *true* east point, to the distance of 7 or 8 leagues, then bending to the northward of east 4 or 5 leagues farther, forms Cape Recife, or Arrecife, the southern extremity of Algoa Bay; on this part of the coast, there is 60 fathoms water within 2 leagues of the shore, in some places. Coast to the eastward.

ALGOA, OR ZWARTKOP'S BAY, is very extensive, but it is only in the western part of it to the N. W. of Cape Recife, where ships may anchor and find shelter, or under the Isles St. Croix. Cape Recife, (Rocky Cape) is in lat. 34° 2′ S., lon. 25° 42′ E. by correct observations; it is low and sandy, with a small conical hill near the extremity, not perceived unless close in shore, having several rocks above water adjacent, and reefs projecting out to the southward and S. W. to the distance of 1½ mile from the shore, on which the sea generally breaks high, when there is much swell. This place is not easily known, although the Islands St. Croix lie in the north part of the bay, about 4 leagues distant from the Cape, the highest of which, appears like a saddle; for they resemble small sandy hummocks on the main, not discernible in coming from the westward, unless close in with the shore. Algoa Bay. Geo. site of Cape Recife.

Coming from the westward, a ship ought to pass round Cape Recife, at the distance of 3 or 4 miles, until it is brought to bear W. by N. or West *by compass*, she may then haul in, and keep within a mile of the shore, (or less) to the next rocky point called the False Cape, carrying from 7 to 12 fathoms, the course being N. ½ E. A Sunken Rock with only 6 feet water on it, bears E. by S. by compass, from the rocky point about 3 miles, and 4 or 5 miles N. by E. from Cape Recife; as the sea does not break on this rock in fine weather, it must have a proper birth, by keeping 3½ or 4 miles from the Rocky Point or False Cape, in passing outside; although a ship may occasionally use the channel inside of the Rock, by borrowing within 1 mile or less of the False Cape. From hence to the anchorage off the How to sail round the Cape into the Bay.

landing place at Baker's River, the course is N. N. W. ½ W. and N. W. by N. distance 2 miles, the soundings regular and clear. The bottom is sandy all over the bay, except between the grand and south Isles of St. Croix, to the eastward of them, where the bottom is foul. The channels betwixt any of these Isles are safe; between the N. W. Isle and the grand Isle, the depths are 10 and 12 fathoms; between the latter and the south Isle, 15 and 15½ fathoms; and between the N. W Isle and the main, 7 fathoms, in a channel about ¾ of a mile broad. To the S. W. of the grand Isle, ships may anchor and receive shelter against the S. E. winds, and it is an eligible situation for clearing Cape Recife, when the gale moderates sufficiently to permit a ship to carry sail.

Isles St. Croix.

Anchorage.

The common anchorage off the landing place, is in 6½ or 7 fathoms, sandy bottom, the mouth of Baker's River W. ½ S. about ¾ of a mile, and the outermost point of the land S. by E. ¼ E. If at the Isles St. Croix, bring the grand Isles to bear from S. S. E. to S. S. W. distant ½ mile, or rather more, in 10 or 10½ fathoms, sandy bottom.

Description of the Bay and Rivers.

The common landing place is on a small beach close to the northward of Baker's River, the mouth of which is generally closed with a dry sandy bar; about 100 yards within it, there is a good spring of fresh water, and about ¾ of a mile to the southward there is a small run of water, called Baker's Fountain. With a westerly wind, any number of casks may be easily rafted off from the shore. Bullocks and sheep are good and plentiful, fish may be caught in abundance with hook and line near the reefs, and oysters are got at low water on the springs; a ship may also refit here with spars, as there are large forests inland.

Zwartkop's River bears by *compass* N. ¾ E. distant 10 miles from the Cape, and W. ½ S. from the Grand Isles St. Croix 7½ miles: at a favorable opportunity, a boat may pass through the surf over the bar into this River, where it is navigable for a boat 8 or 9 miles up; a little below this, the water is fresh. The Dutch have given the name of this River to the bay, but the bay generally retains the name of Algoa, given it by the Portuguese discoverers: other rivers fall into it, to the northward of the Isles St. Croix.

The common anchorage is exposed to the winds from S. by E. to E. N. E.; if fresh from any of these directions it sets in a great swell, but it is said never to blow strong from the eastward, and that a ship may ride here at all seasons of the year, although in the summer months it is probably not very safe. Wood is scarce near the sea, but a few miles inland there is plenty of large timber. The coast is generally sandy around the bay; to the westward there is a range of hills, and to the north-west of Zwartkop's River, the craggy mountain may be seen inland, when the weather is favourable. It is high water at 3h. 20m. full and change, and rises 6 feet perpendicular; variation 28° 48′ W. in 1811. Bullocks and sheep may be had at moderate prices, but vegetables are scarce. Fish are caught near the Isles, and about the reefs of Cape Recife. Oysters may be got on the rocks along shore, and plenty of fish may be obtained in Zwartkop's River with the Seine. The Isles St. Croix, abound with seals; and this, and Plettemberg's Bay, abound with whales, in July, August, and part of September.

Captain Dighton, of the Upton Castle, carried a detachment of 450 troops from the Cape to Algoa Bay in October, 1811, and as he found considerable difficulty in discerning it, having ran to the eastward as far as the Bird Islands, before he found his mistake, and was obliged to work back to the westward; he thinks, therefore, that the following directions may prove useful in approaching Algoa Bay from the westward.

Sailing direction by Captain Dighton.

Ships coming from the westward bound into Algoa Bay, after passing St. Francis Bay, and getting abreast of Christian Vogels River, ought to keep near the shore in about 25 fathoms water: the entrance of this river is in lon. 25° 26′ E. and may be known if near the land, by a large patch of sand on its western side, and there are no sand patches for 2 miles east of it, this space being green, or covered with bush-wood close to the sea. When the entrance of this river bears N. E. you will perceive the mouth of a larger one about ½ a mile to the westward called Stadden River, from whence the course is E. S. E. ½ S. by compass,

to Cape Recife. If the weather be clear when off the latter Cape, Craggy Mountain will be seen bearing N. by W. ½ W., and a high mountain with a flat summit N. W. by N. Cape Recife is a low sandy point, (of which there are several on this coast) not otherwise remarkable, having rocks projecting a mile into the sea, which at a little distance resemble islets. The small round hummock near the extremity of the Cape, is not easily perceived, unless in a particular point of view. Having rounded the Cape, steer north for the next Rocky Point or False Cape, and pass it at 3 miles distance at least, as a Rock lies E. by S. from the point about this distance, with 6 feet water on it; from hence to the anchorage in Algoa Bay, the course is N. W. by N. in regular soundings from 18 to 7 fathoms. We anchored in 7 fathoms fine brown sand, with the flagstaff near the landing place bearing S. W. ½ W. 1½ mile distant, Blockhouse W. S. W. ¼ S., St. Croix Island E. N. E. ½ N., Craggy Mountain N. by W. ¾ W., farthest extreme of land to the Eastward E. ½ S., extremity of Rocky Point or False Cape S. by E. ½ E.

There is a small Fort on an eminence near the landing place, called Fort Frederick, but the chief military station is several miles inland.

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## *COAST of AFRICA, from ALGOA BAY, to CAPE CORRIENTES.*

BIRD ISLANDS, OR CHAOS, in lat. 33° 48′ S. lon. 26° 22′ E. distant about 12 leagues E. ¼ S. of Cape Recife *by compass*, consist of 3 low Isles, with several black rocks above and under water, extending about 3 or 4 miles nearly W. by N. and E. by S. *true bearing*, and distant 6 or 7 miles from the main land opposite. H. M. Ship Stag, examined these Isles in March, 1814, in search of the wreck of the William Pitt; entering between them and the land from the westward, she anchored in 17 fathoms within them, and passed through to the eastward between them and Cape Padron on the following day. In mid-channel, the least water was 12 and 13 fathoms, inside of the Isles, and in some parts 17 and 18 fathoms rocky bottom, but sounding in the boats, the depths decreased regularly to 6 or 7 fathoms close to the main, where the ground was found better for anchorage than near the Islands. Bird Island is the easternmost, about ¼ mile in extent, of a round form, where the landing was found difficult, on account of the rocks, and myriads of birds, particularly Gannets and Peguins which covered the Isle. The next Isle, about ½ a mile in length, called Seal Island, and the third called Stag Island, with black rocks that extend from it to the westward, were all covered with seals. There are 2 sunken rocks surrounded by others, partly visible at low water, but in fine weather, the sea probably does not break on them at high tide; one of these lies 2½ miles West from Bird Island, and S. W. by S. from the west end of the reef by compass. The other is the DODDINGTON ROCK, bearing by compass S. W. from the centre of Bird Island at 6 or 7 miles distance,* being in lat.

Geo. site of Bird Islands.

Doddington Rock.

* This description of the Bird Islands, Doddington Rock, and adjacent coast, is chiefly taken from Lt. Fitzmaurice, of the Royal Navy, who went from the Stag Frigate, in the boats, to examine the Isles and the Channel.

Although the Bird Isles were environed with high breakers, 2 small inlets or creeks were discovered at the west end of the easternmost Isle, with smooth water, where the boats landed. On the beach of the main opposite to the Isles, the high surf rendered it impracticable to land, and steep cliffs with sand hills seemed to present an impenetrable barrier into the interior.

In Mr. Fitzmaurice's plan of these Isles, the Doddington Rock is placed 7 or 8 miles to seaward of the easternmost Bird Island, whereas, Captain James Callander, who was also in the Stag, at a former visit to these Isles, places the Doddington Rock only 3 or 4 miles outside of them. Cape Padron is placed at 8 or 9 miles distance from the easternmost Bird Island by the former officer, and at 6 leagues distance from the same Island by the later, but Mr. Fitzmaurice's plan seems to be nearest the truth.

33° 53′ S., and it was on this rock, that the Doddington East Indiaman struck in the night, when steering E. N. E. by compass, in 1756, where she soon went to pieces, and only about 23 of her crew with the chief mate reached Bird Island on pieces of the wreck, where they remained several months, and built a boat, in which a few survivors reached the Comoro Islands.

There are 25 and 26 fathoms water near the east and west extremes of Bird Isles, and the depths are thought to be from 35 to 40 fathoms near the Doddington Rock on the outside, which is very dangerous for ships making the land hereabout in thick weather, or in the night, more particularly, if standing toward the shore when working to windward.

Geo. site of Cape Padron.

CAPE PADRON, in lat. about 33° 40′ S. lon. about 26° 34′ E. bears E. N. E. by compass from Bird Islands, distant 3 or 4 leagues, being a projecting point of land, with a bay on the western side between it and Bird Islands; but although there is a channel between these Islands and the main, through which the Stag passed, as mentioned above, that might be used in case of necessity, yet it is uncertain if there be any *secure* anchorage inside of these Islands in bad weather, on account of the bottom being rocky near them, as far as that ship explored.

The Craggy Mountain over Algoa Bay, forms the eastern boundary of the chain of mountains on the coast of South Africa, there being no remarkable high land farther to the eastward, for the coast is then of moderate height, with sand downs and steep cliffs in several places. To the eastward of Cape Padron, the sand hills become higher, and appear in square patches, the coast extending *true* E. N. E. Northerly 13 or 14 leagues to the mouth of the Great Fish River, or Rio de Infanta, which is in lat. 33° 25′ S. lon. 27° 37′ E. and continues nearly in the same direction 9 or 10 leagues farther, to the entrance of the Keiskamma River in the Kaffer country, which is in lat. 33° 12′ S. lon. about 28° 7′ E.

Coast eastward of Cape Padron.

Great Fish River.

Geo. site, and Keiskamma River.

The whole of this coast is barren, and composed of sand-hills fronting the sea. The northern extremity of Cape Aguilhas Bank converges toward the coast, as the distance is increased to the eastward of Algoa Bay. Abreast of the river last mentioned, there are no soundings to be got 6 or 7 leagues off shore. From this river's mouth, the coast takes a direction more N. Eastward, to the First point of Natal, in lat. about 32° 22′ S. lon. about 29° 25′ E., which has 3 small hills over it; from hence, it continues in a direction nearly N. E. $\frac{3}{4}$ N. to the Third or Last Point of Natal, in lat. about 30° 15′ S. and lon. about 31° 22′ E. Between these points there is another called the Second or Middle Point of Natal, in lat. about 31° 8′ S. This coast, called Natal by the Portuguese, because they discovered it on Christmas Day, is destitute of good harbours, and little frequented, being inhabited by negroes who are thought to be inhospitable to strangers,* and the coast generally sterile near the sea, there is no inducement for any ship to touch here. The River St. John's falls into the sea, between the first and middle points of Natal, Christian's River on the south side of the latter point, and Ant's River, and Bloody River, between it and the third point. Mostly all of these rivers on the S. E. coast of Africa, are closed up at the entrance by sandy bars, on which there is generally a high surf. St. John's River may be known by the 2 bluff points which form the entrance; between it and the first point of Natal, a concavity is formed, and to the northward of the middle point, the coast assumes the same form, opposite to Ant's and Bloody Rivers.

First point of Natal, geo. site, and of the third point.

St. John's River and others.

Geo. site of the River and port of Natal.

RIVER, AND PORT NATAL, are situated about 4 leagues to the northward of the third point; and the southernmost point of the Bay is in lat. 29° 55′ S. lon. 31° 28′ E. by lunar observations. This place is only navigable by small vessels, the bar being very dan-

* The crew of an American ship, which suffered shipwreck on the Kaffer Coast near the Keiskamma River, was treated with hospitality by the natives; but this is seldom to be expected, particularly farther to the N. Eastward, where the crews of some ships that were wrecked, have most probably perished through the perfidy of the inhabitants.

gerous, having only 5 feet on it at low water, and the rise of the tide is but 5 feet more, except in September and October, when there is about 12 feet on it in spring tides. There is generally a heavy swell on it, and as it is very narrow, 2 or 3 of these will carry a vessel over; the water will then deepen to 2, 3, 4, and 5 fathoms, and she ought to keep along the larboard shore at a ship's length distance. When about a mile within the river, a piece of barren ground is perceived at the declivity of a hill, opposite to which there is anchorage in 4 fathoms, at a cable's length from the shore; but it is confined, and not frequented at present by European vessels. The tide flows here, at 10 o'clock on full and change of moon.

Coming from the northward, the south point of Natal River is most conspicuous; and by its projection the Bay is formed, where a vessel may anchor with a S. W. wind, in 9 fathoms sandy bottom, the point bearing S. W. by S. 2 miles, the northern extreme N. 52° E., and the extreme of the Bay S. 70° W. by compass. From the north point, some sunken rocks extend out a ¼ of a mile; and in going into the river, the passage is between these and the sandy point on the larboard side. To the S. Westward there is a table mountain, with another of the same form under it. The banks of the river are low, abounding with hippopotami, and overflowed at high tides. This place was frequented by the early voyages to India: at present there is no trade carried on here, but poultry may be procured for metal buttons, &c. The natives go nearly naked, are shy of strangers, and though *apparently* inoffensive, are armed with lances, bows, and arrows.

The coast of Natal is generally high land, or of moderate height, interspersed with sand hills; and in many places the shore is rocky, with deep soundings near it. The country is said to be fertile inland, abounding with cattle and elephants.

Fisher's Point, &c.

Fisher's Point is distant from Port Natal 9 or 10 leagues to the N. E., having a river and bay on the north side of it; about 21 leagues farther, in a direction nearly N. E., lies the Point St. Lucia, both of which are low land; and 6 or 7 leagues farther, lies the River St. Lucia.

Coast of Fumos.

From hence to Cape Fumos, the coast continues nearly in a N. E. direction, the distance about 30 leagues, and then takes its course nearly north, about 23 leagues more, to the Island St. Mary's, at the entrance of Delagoa Bay. This extent of coast from Point St. Lucia, has been called Fumos by the Portuguese, on account of the discoverers having perceived smoke in different places. It is generally composed of low land near the sea, and little frequented by Europeans, consequently, its true contour is very imperfectly known. About 11 or 12 leagues to the S. W. of Cape Fumos, Gold Downs River is situated; and on the north side of the Cape, there is another river. Several parts of this coast, have no soundings except near the shore.

Extent of Delagoa Bay.

DELAGOA BAY, called also the Bay of Lorenzo Marques, from its discoverer, is of great extent, being 7 leagues in breadth east and west from St. Mary's and Elephant Islands at the entrance, to the mouth of the principal river, called Delagoa River, also English River, and Rio de Lorenzo Marques. The length of the Bay from north to south is about 10 or 11 leagues, but all the southern part is shallow and unsafe.

Geo. site of Cape St. Mary's.

Cape St. Mary's, the N. E. point of the Island of the same name, is in lat. 25° 58′ S. and in lon. 33° 15′ E., which is a high undulating land; near the middle of the Island on the east side, there is a single hill with white spots. This Island is separated from the point of the main land by a narrow rocky channel. On this peninsula of the main, there is a high hill, called Mount Calato, and the northern extremity bears the name of Point Inyacke, or Unhaca.

Elephant Island.

A little to the N. W. of St. Mary's Island, there is another small one called Elephant Island, from which an extensive reef projects about 5 miles to the northward and westward; between this reef and others, projecting 5 or 6 miles from the land on the north side of the Bay, is the proper channel, about 5 miles broad. From Elephant Island, the south side of

the Bay is barred by a reef, which extends from the Island to the main land on the west side of the Bay.*

Remarks relative to entering the Bay; and how to proceed to the river.

A ship bound into this Bay, should keep boats a-head sounding, as the sands are said to shift with the tides, which are irregular. Outside the entrance, the general depths are from 5 to 7 fathoms, and in some places only 4½ and 4¼ fathoms at low water, about 3 leagues distance from it, and nearly on the meridian of the east end of Elephant Island; a little more to the westward, there are from 6 to 8 fathoms. When a ship has steered in, about mid-channel between Elephant Island and the northern shore, the point at the entrance of English River will be perceived, which is of a reddish colour; she may then steer toward it; the depths will be irregular, decreasing to 3 and 3½ fathoms, when past the Island Shefean, which is on the north side of the channel, about 2½ leagues outside of the river's entrance. A reef surrounds this Island, projecting farthest out from the N. E. part, to the eastward and northward. When the entrance of the river is approached, Point Mawhone on the south side, must be avoided, as an extensive bank projects from it to the eastward and northward; and from the same point, a bank extends along the western shore of the river; Point Rewbun, the north point of the entrance, must therefore be approached nearest in entering this river, where the depths are 3 and 4 fathoms at low water between the points, increasing to 7 and 8 fathoms about 2 miles inside. Ships may anchor at discretion, 1 or 2 miles within the entrance, or farther up, where the depths are 8, 9, and 10 fathoms, to the distance of 4 or 5 miles from the outer point of the river. There is a good watering place on the southern shore, opposite to the anchorage; and a little above Point Talloquecn, a long sandy point on the same side, there is a small rivulet, where the Portuguese have a resident; opposite to the point on the other side of the river, the ruins of the Portuguese fort are visible.

Anchorage.

Geo. site of English river.

Captain D. Inverarity, in 1802, observed the lat. 25° 58′ S. at the anchorage of this river, and made it by lunar observations in lon. 32° 41′ E. Variation 28° 7′ W. High water at 5 h. 15 m. on full and change of the moon, and the rise of tide was 14 feet.

General description.

Sailing into, or out of Delagoa Bay, the shoals will generally be seen in clear weather from the mast-head, but it is advisable to keep a boat a-head sounding, as the sets of tide are not regular, and there are often strong ripplings. The depths above mentioned, are at low water spring tides; the bar of the river, which is outside the entrance, is more shoal than any other part of the channel, there being only 2½ and 3 fathoms on some places of it at low water; ships ought, therefore, to cross it with the flowing tide.

Delagoa, or English River, extends a great way into the country, and is the only one navigable for ships of moderate size; for although several other rivers fall into this Bay, the shallow water on the bars, prevents vessels of burden from entering them. The largest of these is Manice River, on the north side of the Bay, opposite the Island Shefean, and Mapoota River at the southern part of the Bay, where the water is very shoal. A considerable trade was formerly carried on at these rivers for elephant's teeth, but few English ships now visit this Bay. The Portuguese, still retain a little trade with the natives. Ships which trade here, ought not to place much confidence in them, particularly if boats are sent a great distance up the rivers with goods to barter; for in such cases, the natives have been known to attack them, and massacre the crews. At present, they appear more hospitable, if the chiefs are treated in a friendly manner, when they visit a ship trading here. Elephants teeth are procured in abundance, in barter for India goods, and coarse stuffs of various kinds.

The Bay abounds with fish, and inland the country is fertile, producing grain, bullocks, sheep, and other articles of refreshment. Poultry may also be procured, and fruits, among which, pine apples and water melons are the chief. Sugar canes are also cultivated by the

* Between Elephant Island and the reefs which project to the N. and N. Westward of it, there is a narrow channel with various depths The bank of soundings extends but a small distance to seaward; and after getting ground, a vessel soon comes into shoal water, in running into the Bay; the bottom is rocky, with very irregular soundings in general, which require care in a large ship.

natives. This Bay is much frequented by southern whalers, who kill here the black whale, but it is rather an unhealthy place, being subject to Jungle Fevers.

The country inland is mountainous, but low where it fronts the sea, adjacent to the rivers.

CAPE CORRIENTES,* bears about *true* E. 33° N. from Delagoa Bay, distant about 68 leagues. The coast between them forms a small degree of concavity, having several rivers, the largest of which is Inhampura, about 24 leagues from the Cape, and Gold River, a few leagues farther westward. Coast from this Bay to Cape Corrientes.

This part of the coast is seldom seen by European ships at present, and therefore very little known.

Cape Corrientes has a hill over it, which may be seen 10 or 12 leagues distant: the coast about it is clear of danger, with deep water, the edge of the bank of soundings, not extending above 3 or 4 miles off shore. This Cape, by observations taken in 1802, by Captain Inverarity, is in lat. 24° 1½′ S. and lon. 35° 51½′ E. Geo. site of the Cape.

## *DESCRIPTION of the COAST of AFRICA, from CAPE CORRIENTES to MOZAMBIQUE.*

FROM Cape Corrientes to the point of land that forms the eastern extremity of Inhamban Bay, the distance is 5 leagues *true* north; this is a sandy point, with a sand hill over it, called Burrow Hill, from which the coast turns sharp round to the westward, and at 3 miles distance, forms the low point at the entrance of Inhamban River. The anchorage is about 2 miles to the northward of this point, in 7 or 8 fathoms, having the sandy Islands and Banks to the westward. Inhamban Bay and River.

Between the low points which form the entrance of the river, the distance is about 4 miles, but it is almost barred up with low sandy Islands and Banks. The best channel is near the western shore, having from 4 to 6 fathoms in most places, but it is narrow, and not frequented except by small vessels. Inhamban Town is on the eastern shore, about 8 miles up the river, where some trade is carried on by the Portuguese in slaves, &c., having here a resident, and a few troops for his protection: ivory may be procured here. The sand point forming the east side of the Bay and entrance to the river, by observations taken in 1802, by Captain D. Inverarity, is in lat. 23° 47′ S. and lon. 35° 52′ E. Inhamban Town in 23° 51½′ S. lon. 35° 42½′ E. Between the sandy point and Cape Corrientes, the current sets strong to the southward great part of the year, which will oblige a ship to anchor near the shore, should the wind fail in steering to the northward. Geo. site.

COAST OF AFRICA, from Inhamban River, extends nearly north to Cape St. Sebastian; between them there are several rivers, of small size, not navigable; the first called French River, about 12 or 13 leagues to the northward of Inhamban, and another farther northward, called Robber's River. This part of the coast has in general a sterile appearance, with sand points at the entrance of the rivers, and is high in some places, particularly to the northward of the river last mentioned. Coast of Africa from hence to Cape St. Sebastian.

CAPE ST. SEBASTIAN, being of considerable height, may be seen at 10 or 12 leagues distance: it is probably in lat. about 22° S. lon. 36° E. In approaching it, the land appears Geo. site of this Cape.

* Current Cape; the current generally setting round it to the S. W. and afterward along the coast of Natal.

highest on the south side, having a barren aspect; and there are no soundings at a greater distance than 2 or 3 miles from the shore. From this Cape the land trends to the westward, forming a deep bay, and the whole of the coast of Sofala from hence to Luabo River, the southernmost branch of the Cuama, is low and woody, with a sandy beach in most places.

Bazaruto Islands. Directly north from this Cape, the Bazaruto Islands are situated, which appear like one Island in coming from the southward. The northern extremity of these Islands is *said* to be in lat. 21° 12′ S., having a reef projecting from it, which is covered at high water; a large cove is formed by them, where a ship may find shelter from westerly winds, and procure wood and water. It would be imprudent to pass through between any of these Islands, until the channels were first examined by boats a-head; and it seems probable, that these Islands are not so far to the northward as generally laid down.

Sofala River. SOFALA RIVER, is distant from the Bazaruto Islands about 29 leagues to the N. W., and cannot be entered by vessels of great burden, there being only 12 or 14 feet water on the bar at low water.

The Island Inhancato is situated opposite the river and town, extending north and south, and forms the harbour; the entrance to which, is between the north end of the Island and the main-land. As the sands which form the channels in the entrance of the harbour are liable to shift, it is not prudent to sail into it without a pilot.

In hauling in, to the northward of the Bazaruto Islands for the land, the soundings decrease regularly on the bank, from 15 fathoms soft to 8 fathoms sand, about 4 leagues from the shore: but ships running for the land to the southward of Sofala, must be careful of several dangerous shoals covered at half-tide, stretching far out from the coast, which lie

Shoals near Sofala. directly in the way of ships coming from the southward, and bound into Sofala with a westerly wind. One of these shoals is situated in lat. 20° 47′ S. and lon. 35° 38′ E. by observations ☉ ☽, taken in 1802, and nearly 3½ leagues from the land.

Geo. site of Chulawan, CHULAWAN, or Holy Island, which lies near the main, in lat. 20° 36½′ S. and lon. 35° 4′ E. by ☉ ☽, is 5 or 6 miles in length, low, and covered with trees. In 1802, the ship India anchored here in 7 fathoms water, with the Island bearing from S. 17° W. to N. 84° W. distant 2 or 3 miles, and the main-land bearing from S. 12° W. to N. 66° W. There is anchorage inside this Island, and directly facing it, lies the entrance of a river; but several shoals projecting from the points of the Island, and others detached from it, make the channel inside dangerous.*

From the anchorage under the Island Chulawan, the India steered along shore in from 12 to 5 fathoms water, until abreast of Sofala, and there anchored in 5 fathoms at low water, the flagstaff bearing N. 33° W. Matto Grossa N. 54° W. extremes of Sofala Bay from N.

and of Sofala. 53° W. to N. 35° W. Ponta de Zemba N. 8° W., and the extremes of land then from N. 6° W. to W. 16° S. off the flagstaff about 4 miles, Matto Grossa 5 miles, and off Ponta

* Ships touching on different parts of the east coast of Africa, little frequented, ought to be careful in landing with their boats, for the natives, in several places, must be prejudiced against Europeans; not without cause. It has been said, that both French and English vessels have visited the coast, and at different places, after enticing the natives on board, carried them away, and sold them as slaves. It is pretty well understood, that a vessel from the Cape of Good Hope used to procure slaves in this manner; it is said, when she was at the Island Chulawan, to the southward of Sofala, that the son of the Prince (or Chief) governing the country on the banks of the river opposite the Island, with several of his subjects, were allured on board under pretence of friendship, and carried away. This vessel returned to the Cape with a full cargo of slaves, and there is much reason to believe that the greater part of them were procured in this perfidious manner!!

At Sofala, and other places on the coast where Portuguese reside, a guard is placed on board of any vessel that may touch there, to prevent illicit trade; but, by gaining the favour of the commandant, trade may be carried on at most of these places. They are all under the Mozambique Government, and all the coasting vessels belong to that port.

de Zemba 4½ miles. The fort situated on a point of land, insulated at high water, is in lat. 20° 15¼′ S. lon. 34° 45′ E. by lunar observations, and the village consisting only of a few huts, lies on the north side of the river. The Island Inhancato, at the mouth of the river, appears as part of the main, being separated from it on the south side by a small channel, fit only for boats. In moderate weather, at high water spring tides, a vessel drawing under 14 feet may pass over Sofala Bar. The channel at present is between Sofala Spit or Sand, and Matto Grossa Sand, on the south side of the former.

Matto Grossa Sand, on which the sea breaks at a quarter ebb, bears from the point of this name S. S. E. ½ E. 1 or 1½ mile, and joins to the point. Ships ought not to enter this place without a pilot, or it will be necessary to buoy the tails of the sands, the channel being narrow, and deficient of proper land marks to guide a stranger.

A Portuguese resident, with a party of men, are stationed at Sofala; there are also some merchants, who procure ivory, slaves, &c. and some gold, for the ship that comes annually from Mozambique. Bullocks and poultry may be purchased from natives on moderate terms, but the reverse, if procured from the Europeans.

About 30 leagues to the N. E. of Sofala, in about 19° S. lat., the entrance of Luabo River is situated, which is the southern mouth of the Great Cuama River. In this extent of coast, the land is low near the shore, with sandy plains; and several small rivers fall into the sea on this part of the coast of Sofala. The soundings are regular toward the shore. From Luabo River, in proceeding to the N. E., the coast is more elevated, with some red patches, where there is an inlet called India Cove, from whence a sandy plain extends to the northward 4 or 5 leagues. Description of the coast of Sofala.

QUILIMANE RIVER's S. W. point, terminates this sandy plain, and the entrance of this river, or principal mouth of the Cuama, is half a league broad between the points which form it; that on the south side being called Seahorse Point, and the northern one, Point Taugalane. The course of this river is 180 leagues in length; about 6 leagues up, on the northern shore, the first Portuguese factory was situated; and from the undulations of the river, the distance to Sena, the principal settlement, is more than 60 leagues, which is in lat. about 17° 37′ S. The entrance of Quilimane River is in lat. about 18° 10′ S., lon. 37° 30′ E., and is not easily known, the land on each side being low, with cocoa-trees; but on the southern point, there is a small sand hill. About 4 or 5 leagues up, fresh water may be had from a stream on the north shore. There is generally a considerable swell on the bar, which has 2½ fathoms water on it; inside the river, the depths are from 4 to 7 fathoms. Quilimane River. Geo. site.

In sailing into this river, it must be observed, that two spits of sand project to seaward in a S. S. E. direction from the points that form the entrance, which considerably contract the channel on the bar. Being bound in, steer for Point Tangalane, on which a few cocoa-nut trees will be perceived bearing about N. N. W.; and the river's mouth will be seen open in this direction. Keep mid-channel between the breakers, which run very high in bad weather on the tails of the sands. Observing the set of the tide, and with the precaution of keeping a boat a-head of the vessel, a stranger may enter without fear, and proceed, keeping the northern shore aboard, to the town, which is about 5 leagues from the entrance, on the north bank of the river.

When southerly winds prevail, it is prudent to anchor in the road to the southward of Seahorse Point, in 4 or 5 fathoms at low water, about 3 miles off shore, in lat. 18° 8′ S., which point may be known by sandy spots to the southward. In the opposite monsoon, the anchorage should be to the northward of the entrance of the river, as the winds frequently blow strong in both monsoons, and the current runs along shore with the wind. From this river, the Portuguese export slaves, elephants teeth, and some gold.

About 32 leagues N. Eastward from Quilimane River, the river Quizungo is situated, where trade is carried on by boats from Mozambique: between these, there are two other Quizungo River.

rivers of smaller size. From the Bazaruto Islands, near Cape St. Sebastian, the Paracel, or Bank of Sofala, extends along the coast to the Premeira Islands, which are the southernmost of a chain of Islands extending along the coast of Angoxa. The soundings on this bank are mostly regular, and no danger on it to be apprehended with proper care. Many whales of the black kind are seen; and the land may be generally discerned in 20 fathoms water. The winds on the coast of Sofala, prevail from S. and S. Eastward; but in Dec. Jan. and Feb. the northerly monsoon extends along this coast; the current frequently sets to the southward, and at other times, it is very changeable.

Bank of Sofala.

Geo. site of Fogo.

FOGO, or Fire Island, is situated (opposite Quizungo River) in lat. 17° 12½′ S., lon. 38° 52′ E., named by the Portuguese from a lighthouse on it, which was formerly kept burning from the 1st of July to the end of October. This is the southernmost of those small Islands adjacent to the coast, called Ilhas Premeiras, or First Islands, and may be seen about 5 leagues from the deck, with breakers projecting from it about a mile, or rather more. About 12 leagues to the S. Westward of Fogo, and 7 leagues from the main, in lat. about 17° 39′ S., lon. 38° 27′ E., there is a rocky bank, which the India, in 1802, crossed over in 6 fathoms rocks, with several discoloured spots to the northward of her, which appeared much shoaler. This bank is a little outside the verge of soundings, and is probably very dangerous. When on it, the land was not seen from the mast-head.

Primeira Islands, Shoals near them, with the Geo. site.

About 1½ league to the S. W. of Fogo, there is a sand bank, between which and the Island, a ship may pass in 14 and 15 fathoms, taking care to keep nearer to the Island than to the bank. There is another channel between Fogo and a bank to the eastward of it, with the same depth of water as the former; and farther eastward, a third passage between the bank now mentioned and Trees Island, having in it 14 and 15 fathoms water. Trees Island is about 4 leagues E. N. Eastward from Fogo, and is very low. A little more to the eastward, Razor Island is situated, in lat. 17° 5′ S., and lon. 39° 12′ E., which is also low, and called sometimes Flat Island, and Palm Trees Island. To the northward of Trees Island lies the Crown Sand, with some verdure on it, and breakers around. This chain of Islands and Banks, is about 3 leagues distant from the main land, lying parallel to it, by which a channel is formed, navigable for ships. Opposite to Razor Island, the channel is contracted by a point of land projecting to the S. Eastward. In passing through this channel, inside the Islands, a ship ought to keep much nearer to them than to the main, and will in such case, have probably about 10 fathoms water in passing through; but to the N. Eastward of Trees and Razor Islands, at 3 to 5 leagues distance, there is no ground with 60 fathoms line.

Angoxa Islands; Geo. site of Caldeira.

About 8 leagues to the E. N. E. of Razor, or Flat Island, a Sand Island is situated, called also the Bank of Moma; and in the interval lies a reef with breakers, between which and the bank there is a passage, and another with 8 and 10 fathoms water between the bank and the Island. From hence, the Island Caldeira, or westernmost of the Angoxa Islands, may be perceived, which lies in lat. about 16° 40′ S., lon. 39° 40′ E. These Islands are 4 in number, with 2 reefs of breakers between them, and lie parallel to the coast, about the same distance from it as the Premeira Islands. Through among them, ships may pass with safety; and also between them and the coast, in 8 or 10 fathoms soft ground, by keeping much nearer to the Islands than to the main; but it would be imprudent to run through these channels in the night.

Geo. site of Mafamale.

ISLAND MAFAMALE,* is the easternmost of those called Angoxa Islands: Capt. Huddart, on the 26th Aug. 1784, made it in lat. 16° 21½′ S., and 22¼ miles east from the Europa Rocks, in a 3 days run, by chronometer. He made those rocks in lon. 40° 3′ E. by mean of lunar observations and chronometer, which will place the Island Mafamale in lon. 40° 25½′ E. To the N. W. of this Island, lies Angoxa River, the bar of which is very shallow, but frequented by the boats of Mozambique.

* Called also Mafamede, and Matamede.

About 7 or 8 leagues to the N. Eastward of Mafamale, is the Bank or Shoal of St. Antonio, which is covered at high water. Between it and the land there is a Channel; in passing through, a ship should not approach the coast nearer than 7 fathoms, nor deepen more than 11 fathoms in the offing. Capt. Huddart, in the Royal Admiral, had soundings 13 fathoms, distant 10½ leagues N. 36° E. (true bearing) from Mafamale, and 2 leagues off shore, which were thought to be on the above-mentioned shoal. St. Antonio's Shoal.

From this Island a reef projects out a considerable way to the eastward, and the whole of these Islands are small, none of them more than 2 or 3 miles in extent, and generally surrounded by reefs.

About 4 or 5 leagues to the N. E. of St. Antonio's Shoal, at the distance of 4 or 5 miles from the shore, there is a dangerous Rock on which the sea does not break at high water; to avoid it, a ship ought to keep in 20 fathoms water, or more, in passing along the coast at this place. A dangerous rock.

MOGINCALE SHOAL, situated about 2 leagues from the high part of the coast of the same name, renders the preceding caution more necessary, on which the sea breaks at low water spring tides, but there are 2 or 3 fathoms on it at high water. The Scarborough at 10 A. M. 22d June 1735, in 16 fathoms hard sand, saw breakers on this shoal bearing from N. E. ½ N. to N. E. ½ E., distant about 2 leagues; she steered out S. E. and at noon observed in lat. 15° 37′ S. extremes of the land from N. by E. ½ E. to W. by N. ¼ N., the breakers then bearing N. W. by W., no ground 30 fathoms, and distant from the shore 6½ or 7 leagues. This shoal, or another near it, appears to have been seen by the ship Duke of York, bound from England to Mozambique in 1723, as will be seen by the following extract from her Journal. Mogincale Shoal.

August 6th, 1723, at 10 A. M. saw the breakers of the Firebrass Shoal, which extends across it; and it is above 2 miles in length, in the form of a triangle, the outer point projecting about 2 leagues from the shore, and lies in lat. 15° 30′ S. The best mark for this Shoal, is an opening bearing W. by S. from it, like the entrance of a river; there being no other opening in the land of a similar kind, between lat. 15° and 16° S. The land abreast of the Shoal, is rather higher than to the southward, interspersed with patches of trees, of black aspect, when contrasted with the sandy coast. Firebrass Shoal.

When to the N. E. of this Shoal, several palm trees on an Island called Mafalane Movya, will appear as part of the main; and to the northward of this Island, there is a sandy beach 4 or 5 leagues in length, ending at Bajone Point, which is the south point of Mocamba River. Along this beach called Movinxes, there are tall trees, resembling pines when viewed from sea. Between Mogincale and Mocamba River, the coast should not be approached nearer than 15 fathoms, on account of another shoal of small extent, said to have 3 fathoms water upon it, and distant about 3 leagues from the shore, a little to the southward of Point Bajone. This seems to be the rocky shoal on which the Firebrass struck, having only 10 feet water upon it, situated in lat. about 15° 30′ S.

From Mafamale (the easternmost of the Angoxa Islands) to Mogincale Point, the distance is about 18 leagues to the N. E.; from that Point to Mocamba River 8 leagues; and from hence to the entrance of Mozambique Harbour, 3 leagues.

Mocamba River is broad at the entrance, and vessels of considerable size may navigate it to the distance of 2 or 3 leagues up with the tide. In steering toward the mouth of this river, a ship must avoid the northern point, from whence a rocky bank projects 3 miles to the eastward, then taking a direction more to the N. E. joins the Island St. Jago; it is called St. Jago Bank, is steep to, composed of rocks, and very dangerous: the sea breaks on it in bad weather. Mocambo River.

MOZAMBIQUE HARBOUR, is one of the best on the east coast of Africa: the land around it is in general low near the sea, with topes of cocoa-nut trees in several places. The Mozambique Harbour.

2 Islands, St. Jago and St. George, lie to the southward of the entrance of the harbour. On the north side of Cabeceira Shoal, extends around, land of the same name, bounding the channel on the north side; and near the northern extremity of this shoal, there is a small low Island, called Arbores, or Tree Island, having 2 small islets near a mile to the southward. The Island Mozambique, is about 3 miles to the N. Westward of the Islands St. Jago and St. George, to the westward of which is the harbour, under the fort and town. St. Jago Bank extends from that Island to Mozambique Island, and from thence to the western shore.

Directions for sailing into it.

To sail into the harbour from the offing, steer for the Island St. George, giving a birth of $\frac{1}{4}$ of a mile to the east end, from which projects a reef of rocks. Having passed this Island, steer for the flag-staff of Mozambique Fort, keeping Pao* Mountain open a sail's breadth with the North Bastion, if the wind is northerly; and on with it, if the wind be southerly, which will carry a ship up with Nostra Senhora de Ballawerty, a low church at the foot of the eastern angle; from which a spit projects to the eastward about 300 yards, that drys at low water spring tides, and is steep to. The pilots have no mark for this spit, but go entirely by their distance from the fort, and Cabeceira Shoal, which is generally discernible by green water on it. The passage between St. George and St. Jago, with a southerly wind, may be taken by small ships coming from the southward, it being nearer. Keep mid-channel between these Islands until Arbores, or Tree Island, is open with the white sand on the west side of St. George's Island, then steer for Cabeceira church, or the north angle of Mozambique Fort, if the wind is scant from the westward, which will carry a ship over the sand in 3 to $3\frac{1}{2}$ fathoms at low water spring tides; and having opened Pao Mountain with the Fort, observe the former directions. The passage to the southward of Mozambique, is only fit for boats. When inside of St. George's Island, a ship may anchor and make the signal for a pilot.

In the proper channel to the northward of St. George's Island, the general depths are from 7 to 14 fathoms in passing the Island, and in sailing from it to the Fort, with Pao Mountain a little open from the North Bastion. To the westward of the Fort, the water becomes more shoal, the general depths being from 3 to 4 fathoms abreast the town where the ships moor, at less than a $\frac{1}{4}$ mile from the shore. When past the Fort, a ship should, in steering for the anchorage, keep near the shore, on account of a bank of sand, with 2 fathoms on it at low water spring tides; the nearest part of it, is distant a large $\frac{1}{4}$ mile from the town, bearing to the northward. Ships may moor a little within the Fort, before they come to the bank now mentioned, or directly betwixt it and the town, at discretion. From Mozambique Island, the harbour extends in a westerly direction to the distance of 4 miles, and is about $1\frac{1}{2}$ to 1 mile in breadth between the banks which line each shore, the general depths being from $4\frac{1}{2}$ to 6 fathoms at low water. At the upper end of the harbour, where it converges and forms a kind of cove or inner harbour, with 4 and 5 fathoms water, the rivers Ampapa, and Mushereel fall into it, near which are some villages, and garden houses. Off the south point of Mozambique Island, St. Lorenzo Fort is situated, and $\frac{1}{2}$ a mile farther to the N. Eastward, a church called St. Antonio.

Geo. site.

Capt. Inverarity, (from whose survey this account of Mozambique Harbour is mostly taken) by observations made in 1802, places the Island Mozambique in lat. 15° $1\frac{1}{2}'$ S., and lon. 40° 47′ E.† by moon. The variation was 18° 40′ W. High water on full and change of moon at 4h. 15m. The rise of tide 12 feet.

* Pao Mountain is a hill of round form, resembling a foot or shoe, distant about 9 miles from St. George's Island; and is situated a little inland, to the westward of the upper end of the harbour. There is a Table Hill inland to the N. Westward.

† Captain W. Owen of the Royal Navy, by lunar observation, made Mozambique in lon. 41° 46′ E.; but late observations of the French, make it in lon. 40° 46′ E., and the Portuguese survey of that part of the coast, places it in lon. 40° $43\frac{1}{2}'$ E. These nearly corresponding with the observations of Captain Inverarity, strengthens the opinion that he has placed it nearly correct, and that there *probably* was an error in Captain Owen's observation, although this officer is an excellent astronomer and marine surveyor.

This port depends on Madagascar and other places for supplies of provisions; bullocks are, therefore, not procurable under 15 dollars a head, and rice from 2 to 3 dollars per bag. Water is a scarce article when the harbour abounds in shipping, there being only 2 good wells, one on the Island, the other on the main: the rest are all brackish, the water in them being only fit for cooking.

From this place 10,000 slaves are said to be annually exported to India, the Islands Mauritius, and Bourbon, the Rio de la Plata, and coast of Brazil, at an average price of 45 dollars each! The other articles exported, are ivory, Columbo root, gold brought from Zeno and Sofala, the latter in small quantities; also ambergrease, some amber, and cowries. Although it is intended by the Portuguese Government to exclude strangers from trading here, there is, nevertheless, a considerable contraband trade carried on.

The prevailing winds on the coast about Mozambique, are northerly, from October to April; and from the southward, during the rest of the year. The current sets strong to the southward, when the winds blow from the northern quarter.

Quintangone River.

About 2 leagues to the northward of Tree Island, the Island Quintangone is situated near the point of the same name; and Quintangone river is 4 or 5 miles farther to the westward; off which, there is a small Island called Kissangula. This river, like Mocamba River, is broad at the entrance; from the south point of it, a shoal extends along the shore to Tree Island, which is distant about 4 miles.

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## *COAST of AFRICA, from MOZAMBIQUE to the EQUATOR.*

Coast to the northward of Mozambique.

THE LAND NEAR THE SEA, is low about Quintangone Point, and takes a northerly direction to Quisimasugo River, which is distant about 7 leagues from the Point: about 6 leagues farther, lies the River Fernando Veloso, said to be spacious and safe, with deep water from 15 to 25 fathoms, and affording good anchorage on the west side, within the entrance. From hence, the distance is about 3 leagues to the River Pinda, or Tapamandy, abreast of which, at the distance of 1½ league from the shore, there is a very dangerous Reef with Breakers, in lat. 14° 10′ S. called Pinda Shoal, making it prudent to keep 3 leagues from the coast, in passing along here. Opposite to the north point of this Reef, there is said to be a safe bay with an islet on the north side, where ships may anchor in good ground, sheltered from all winds, and find plenty of fish, wood, and water.

Pinda River and Shoal.

Mancabala Bank.

Indujo Bank.

and Road Almedoe.

From Pinda, to Camonco or Camouco River, the distance is about 6 leagues; and from hence to Sirancapa or Sinnacapa River, about 12 leagues more. From the point of the latter River, the bank of Mancabala extends 6 or 7 leagues to the southward, parallel to the coast, and is distant from it about 3 leagues in some places. About 4 or 5 miles southward from the southern extremity of Mancabala Bank, there is another called Indujo Bank, extending east and west 3 or 4 miles. Between these Banks there is a channel, with 5 and 6 fathoms in it, and betwixt them and the coast, the depths are from 7 to 10 fathoms to the southward, shoaling to 2 or 3 fathoms toward the Point Sinnacapa, inside Mancabala Bank. These Banks are dangerous. The River Minsangegy is opposite to Indujo Bank, near the southern part of the remarkable craggy peaks. Inside of Mancabala Bank, the anchorage is safe in all winds, and is called Almedoes Road, or Port.

A ridge of hills extends from Pinda River to that of Sinnacapa, which is very remarkable toward the latter River, this part of it being composed of sharp craggy mountains. The

Geo. site of Pico Fragos.

highest and most conspicuous of these mountains, called Pico Fragos, or Craggy Peak, is in lat. about 13° 30′ S., and lon. 40° 50′ E. by lunar observations, taken in 1793, corroborated by chronometer. These craggy peaks are the best mark for this part of the coast.

It may be observed, that the currents generally set to the southward along the coast of Mozambique, as they do on the coasts of Sofala and Natal.

From Sinnacapa Point, the direction of the coast is nearly north, about 8 leagues to Pemba Bay and River, which are very little known to Europeans. To the northward of this bay, there is a projecting part of the coast called Point du Diable, or Devil's Point, by which a bay is formed to the westward of it: and from this place the coast extends about N. by W. and N. N. W. nearly to Cape Delgado.

Querimba Islands.

QUERIMBA ISLANDS, form a chain, extending along this part of the coast to Cape Delgado; which with these Islands, is mostly low land, and generally covered with trees; several of the Islands have reefs projecting to seaward, and as they cannot be seen far, should be approached with caution. A ship, in coasting along, ought to keep 4 leagues from the main, or rather more in some places, as several of the Islands and reefs, extend from it nearly that distance, and no soundings are in general to be had at 1½ or 2 miles distance from the edges of the reefs.

Geo. site of Querimba.

The largest of these Islands are situated nearly between 12° S. and 12° 20′ S. lat., and are more particularly known by the name of Querimba Islands than those farther north, toward Cape Delgado. That called Querimba, which gives name to the whole, is said to be in lat. 12° 20′ S., lon. about 40° 58′ E., being about 4 or 5 miles in length, and the most considerable of these Islands.

Oibo Island,

OIBO, is the next Island to Querimba, in a northerly direction, which has a channel on the north side, leading to anchorage inside the reefs; this channel is bounded on the south side by a reef projecting from Oibo, and on the north side by the reef extending from the islets off Matemo. In steering for the channel, the reefs may be perceived by the discoloured water; outside of them a ship may anchor, and also off the edge of the reef joining Oibo and Querimba, should it fall calm. The anchorage at Oibo is said to be exposed to easterly winds, and seems only proper for small ships, some plans marking 6 and 7 fathoms in the channel, while others place but 3½ and 4 fathoms in it, and at the anchorage. It is high water at 4 hours on full and change of moon. Querimba may be known by palm trees on its north point, and a white sandy beach. This, and the other Islands to the southward, are mostly connected by reefs.

and the anchorage.

Matemo Island.

The Island Matemo, to the northward of Oibo, has a channel within it, with 6 and 7 fathoms water, and passages off the north and south ends between it and the adjacent reefs, with 9 and 10 fathoms water in them. Inside of Turtle Island, which is the next to the northward of Matemo, there is also a passage for small vessels.

Coast of Querimba from Oibo to Cape Delgado.

From Oibo Island to lat. about 11° S., the coast extends nearly north, from hence to Cape Delgado, it forms a concavity, subject to various undulations, by which large bays and some safe harbours are formed. The land from Cape Delgado to a considerable distance southward, is generally delineated on the charts about N. by E. and S. by W.; but observations taken in the Montrose, in 1793, made its direction considerably to the westward of the true North Point.* The whole of the coast is generally low, with several small Islands and reefs fronting it; a ship should, therefore, preserve an offing of 4 leagues in sailing

* H. M. Ships Leopard, Dædalus, and Orestes, in 1798, were on this part of the coast, and Captain Ellis, in his journal, remarks, that the coast trends from Cape Delgado S. 42° E. about 70 miles, and afterward to the S. W. Nevertheless, a Portuguese MS. Chart, obtained by Mr. Salte from the Governor of Mozambique, makes this part of the coast extend nearly north and south. But the meridian of this Chart, may probably be magnetic, and not the *true* polar meridian.

along, to avoid the dangers which lie scattered in this space, more particularly as the land can only be seen at a small distance.

The country vessels pass inside the Islands and reefs, in sailing from one place to another.

MACALOE BAY, OR HARBOUR, is situated about 12 leagues to the northward of Oibo, and is formed between the main land and the Island Macaloe: ships may enter this place either from the north, or southward, there being 2 channels. The passage by the south end of Macaloe, is between the reef projecting from the S. W. end of that Island and the small Islands Desmelondon and Quifoula to the S. W. and Westward. On the S. W. side of Desmelondon, fresh water may be obtained: this Island must not be approached on the east side nearer than a mile, on account of a reef. In the channel betwixt these Islands and Macaloe, the depths are 7 and 8 fathoms; but it is proper, if a ship intend to touch at this place, to make the signal for a pilot. On the north side of Point Niatie, on the main, stands the town Pingnauie directly opposite to the Island Macaloe, where the Sultan resides, and where vessels anchor that trade to this place, in good holding ground, mud and sand. Macaloe Harbour.

CAPE DELGADO, in lat. 10° 6′ S. lon. 40° 50′ E. by lunar observations and chronometers, is a low point, not easily distinguished from the low Islands to the southward, the nearest of which, Nicomaje, is distant from the Cape about 2½ or 3 leagues, and as the land of the Cape stretches west about 4 leagues, then to the southward, a safe bay or harbour, is formed on the west side of the Island Nicomaje. The channel into this bay, is formed between the Island and the land of the Cape, having depths from 10 to 30 fathoms; and the course is west, keeping within a moderate distance of the main, as a reef projects from the north part of the Island; when round the latter, haul to the S. W. and Southward, and anchor opposite to the Island, where the River Somembo is situated on the main, with other rivers between it and the Cape. Geo. site of Cape Delgado. Bay or Harbour S. W. of it.

A reef projects from the Cape into the sea, and from this promontory the land takes a N. Westerly direction, and becomes higher in several places than to the southward of the Cape. About half-way between Cape Delgado and Quiloa, there is a remarkable mountain, with 3 elevated hummocks on it of a hemispherical form, and it is detached from any other high land.

MONGALLOU RIVER, to the N. W. of Cape Delgado, said to be in lat. 10° 7′ S. is about a cable's length wide between the sands and reefs at the entrance, difficult of access, but has from 9 to 11 fathoms in the fair channel. This place is not easily distinguished. Should a vessel intend to touch here, in coming from the northward, when within 2 miles of the entrance, 3 rocks will be perceived, appearing like the wreck of a ship; bring them to bear S. S. W. by compass, and steer for them, till they are distant about ½ a mile; keep them a little to the southward until the bay is open, and stand up the channel. A ship may anchor in it, and warp up, if the wind be light or baffling; then moor above the village Mongallou, a little within the north point of the river; or she may go higher up, where there is more room, and be land-locked. The depths in the river are from 9 to 12 fathoms up to the anchorage; and it is high water at 3¾ hours on full and change of moon. Wood is easily procured, but water with difficulty. The Arabs trade to this place for ivory, and slaves are sent from hence to Quiloa. Mongallou River. How to enter it. Anchorage.

LINDY RIVER, about 5 or 6 leagues from Mongallou, and 12 leagues to the N. W. of Cape Delgado, is large and easy of access, with many villages around, the principal of which is Lindy, on the northern side. The south point of the entrance, must not be ap- River Lindy.

proached close, but the northern shore is bold when a little inside the river. The depths are 30 and 28 fathoms at the entrance, decreasing to 8 and 9 fathoms abreast the village Lindy. By the French plan, this appears an excellent harbour; wood, water, and other necessary articles may be easily procured. It is high water about 3 hours 40 minutes, on full and change of moon, and the rise of tide is considerable. Betwixt Lindy River, and Quiloa, there is another river called Youe, or Mousongo, which, like many other places on the east coast of Africa, is very imperfectly known.

From Cape Delgado to Quiloa, the coast extends to the N. Westward, forming a concavity, with several reefs and islets contiguous to the shore; and the current sets into the bight of Quiloa, in the northerly monsoon.

Quiloa Harbour. QUILOA HARBOUR, is formed by the Island of the same name, which appears like 2 Islands when seen from the offing; it is 5 or 6 miles in extent, from north to south, and on it the town of Quiloa is situated. There are 2 passages into this port, 1 to the northward, and 1 to the southward of the Island, having from 20 to 10 fathoms in the latter, and from 30 to 12 in the former, either of which may be chosen, as the monsoon or other circumstances may render proper. Ships which enter by the northern channel, anchor at the N. W. part of the Island, and those which come by the other, anchor to the southward of the Island, in 9 or 10 fathoms. A bank of shoal water extends from its west point to the peninsula of the main land, having only 1 and 2 fathoms on it at low water, but small vessels may pass over it at high water, from the north to the south part of the harbour, as the tide rises from 12 to 14 feet. Two spacious inlets or arms of the sea, extend in a circular form inland; 1 from the north part and the other from the south part of the harbour, having in them several islets, and depth of water sufficient for ships of any size; between these inlets, the main land is formed into a peninsula, the extremity of which is opposite the Island. Two other peninsulas are formed between the inlets and the sea, so that the Island Quiloa is situated nearly at equal distance between these 3 projecting parts of the land. The Island is nearly environed by a reef, and both points which form the entrance leading to the harbour, have reefs projecting from them; that from the north point, extends a great way to the eastward; this point is readily known, being low and sandy, with several trees on the inner part of the reef. The south point of the entrance is also low, distinguished by a pagoda on it, seen at a considerable distance like a vessel under sail. To the northward there are several hills inland, but all the coast about this harbour is low, and covered with mangroves, which retaining the mud, make banks and islands, and renders it unhealthy. Water and provisions may be procured at this place, but few ships touch here at present.
Geo. site. The natives have in general, been considered unfriendly to strangers. By the best accounts, Quiloa is situated in lat. 8° 41′ S. lon. 39° 47′ E. High water at 3h. 45m.

Monfia Island. MONFIA, in lat. about 7° 55′ S. is the first large Island to the northward of Quiloa, but between them a chain of islands and reefs extend along the coast, with a channel inside of them; Monfia is also surrounded by islands and shoals. There is anchorage under it on the S. and S. W. sides, betwixt the reef extending from the main island, and the group of islands and shoals to the southward: it is said to be fertile, but little known to Europeans. Water and provisions may be easily procured here, but care is requisite in approaching the southern part of the Island, on account of extensive and steep coral reefs. Between Monfia and Zanzibar, there are several islands, and a passage along the coast, inside of most of them, fit for small vessels.

Island Zanzibar. ZANZIBAR, called ZUNGBAUR by the Arabs, is the largest Island on this part of the coast, distant about 45 leagues to the northward of Quiloa. There is a considerable trade with this place, carried on by the Arabs from Muscat,* who also trade to most of the

* Zanzibar is tributary to the Imaum of Muscat, who keeps an Arab Governor there.

harbours on the east coast of Africa, for ivory, slaves, &c. Betwixt Zanzibar and the main land, there are several small islands and shoals; reefs also project from the north and south extremities of the principal Island.

Directions for sailing into the harbour.

A ship intending to touch at this place, should steer to the north part of the Island; off the N. W. end of it, 2 small Islands will be perceived near each other, the southerninost is largest, being of considerable extent, north and south; and called Tunbat or Tombette; should it be late in the evening, she may anchor near these Islands, on the west side in muddy ground, from 20 to 26 fathoms. In running along the west side of Tunbat, the soundings are regular, at the distance of 2 miles from the shore, and the course about S. S. W. and S. by W. From the N. W. end of Zanzibar, a bank extends in a S. W. direction about a mile from the shore, having on it 7 fathoms, fine sand; when past this bank, there are regular soundings in a S. by W. line, all the way to the 3 Islands situated to the northward of the town. Outside of these, a ship may anchor, or go into the inner harbour at once; the dangers are generally visible, particularly at low water; and although the pilots use no marks to carry ships into the harbour, the following directions may be of utility.

When you come near the easternmost of these 3 Islands (called by some French Island) you will see the bank extending from it, which is partly dry at low water, and by projecting nearly half-way across, makes the channel very narrow. There is also a bank on the opposite side, projecting out a small distance into the sea, and forming an elbow along that shore. When you come near this bank, the south point of the town of Zanzibar will be open with the eastern Island; on this south point there are 3 remarkable cocoa-trees, and a white house near them. Keep the 2d or middle tree on with the white house, and you will be in the best water, 8 and 9 fathoms. When these 3 Islands are in one, you are abreast the bank, and will have 6 fathoms, 1 or 2 casts; when the Islands appear open of each other, you are past the shoal part of it, and may then steer for the south point of Zanzibar, leaving an elbow of a bank near the shore on your larboard hand, and anchor within a mile of the town, in 7 fathoms mud. The south point of Zanzibar will then bear S. by W. $\frac{1}{4}$ W. with a small Island a little open; the flag-staff on the Fort, or Governor's house S. $\frac{3}{4}$ E.; the fresh water river E. by N. 4 miles, having a single cocoa-tree on the summit of the hill, a little open to the left of it; the easternmost Island, called French Island, from which projects the bank, N. E. $\frac{1}{2}$ N. and the 2d Island having the N. W. end of Zanzibar just open of it, N. $\frac{1}{4}$ E. The reef environing the Islands, is mostly dry at low water; and at high water, only navigable by boats.

In running along the S. W. part of Zanzibar, the western side of the channel is bounded with reefs extending about north and south, which are nearly dry at low water. There is a village and some fishermen's huts near the N. W. part of the Island; and the town is composed of few houses, the dwelling places being in general huts constructed of mat, which are very neat. The Island, in sailing along, has a beautiful appearance, and is every where woody.

Anchorage.

Water may be procured in Fresh Water River, but it must be filled on the falling tide, as it is brackish at high water. The casks are rolled a considerable distance from the beach, filled from the stream, and taken off on the flood. Water may also be got from a well about $\frac{1}{4}$ of a mile round the south point of the Island, to which the boats may make 3 or 4 trips daily. From religious motives, the natives will not permit European ships to receive a supply of water from the wells about the town.

This place abounds with refreshments, bullocks, goats, poultry, rice, dholl, cocoa-nut oil, &c. with a great variety of delicious fruits. The Governor makes a monopoly of the sale of these articles, charging exhorbitantly for them; the inhabitants, when permitted, sell their articles more reasonable. They go always armed, and appear timid, except when a considerable number are together.

The foregoing remarks relative to Zanzibar, are mostly from the observations of Captain Bissell, taken in H. M. ships Leopard, and Orestes, in February 1799; which ships touched

there for refreshments, in their passage to the Red Sea, after having endeavoured in vain to beat up along the coast against the N. E. monsoon. They arrived the 19th of February, and sailed the 5th of March; and after passing along the coast from hence to Cape Guardafui, arrived in Aden Road the 11th of April.

Geo. site. The observations taken in these ships by ☉ ☽, make the anchorage of Zanzibar in lat. 6° 6′ S. lon. 39° 33′ E. North end of the island in lat. 5° 40′ S., lon. 39° 46′ E., and the south end in lat. 6° 28′ S., lon. 39° 46′ E., variation 14° W. High water, on full and change, at 4½ hours, and the rise of tide is 12 feet. Capt. Smee, in the Ternate, Bombay cruizer, in 1811, made the town in lon. 39° 0′ E. by ☉ ☽, but Capt. Bissel's longitude stated above, is probably nearest the truth, as some other navigators place it nearly in lon. 40° E.*

Geo. site of Pemba. PEMBA, called KEDDREE by the natives, extends about 14 or 15 leagues nearly north and south, the north end being in lat. 4° 50′ S., the south end in lat. 5° 30′ S. lon. 40° 19′ E., or 46 miles east of Zanzibar town by chronometer; variation 13° 4′ W. in 1811. This Island is low, well wooded, and fertile; rice is cultivated here, and carried to Zanzibar: the shore in general is fronted by a reef, requiring caution when near it in the night, but in some places there are soundings, where ships may anchor and procure supplies, observing not to put too much confidence in the natives, until they are better known.

There is a channel betwixt Pemba and the coast, but it is contracted by reefs on each side: opposite to this island, there are some small rivers and islets close to the main.

Mombas. MOMBAS ISLAND and PORT, or MOMBAZE, bears nearly N. by W. ½ W. (*true* bearing) from the north end of Pemba Island, distant 18 leagues. This port is formed by an arm of the sea, into which fall several small rivers; and this narrow arm or inlet extends around Mombas Island, which is situated inside of the two points that form the entrance: a little outside of this port, there are no soundings.

There is a Fort and Town on the island, a little within the harbour, where ships may procure refreshments; fresh water may be got from wells in different parts, and the anchorage is safe. Between the two reefs which form the entrance, the depths are from 6 to 8 fathoms, continuing nearly the same to the town, along the east side of the island; on the south side of the island, between it and the south reef, the depths are greater, and this part may be called the southern harbour. Mombas Island, and the contiguous land, are low, and woody; the flag staff of the fort may be perceived in passing, but the town is obscured by trees: there are three remarkable hummocks to the northward of this place, called the Hummocks of Mombas, by which it may be easily known. The observations of ☉ ☽ taken in H. M. S. Leopard, make the entrance of Mombas Harbour in lat. 4° 4′ S., lon. 40° 2′ E. Variation 13° 20′ W. in 1811. It is rather difficult of access, on account of the extensive reefs, and the natives are said to be inimical to Europeans. Since the Arabs and natives expelled the Portuguese from the ports on this part of the coast, few European vessels touch at any of them, more particularly at Mombas, where the government has in general endeavoured to allure and seize the European ships that touched here for refreshments. Should a ship be in want of water or other articles, she ought to proceed to Zanzibar, which is preferable to the other ports on this coast; and there is less chance of treachery, it being under the government of Muscat, and more civilized. At Mombas, it is high water at 12 hours, on full and change of moon, rise of tide 8 feet.

Geo. site.

Zanzibar, the best place for Vessels wanting Water, &c.

Chenee River. CHENEE RIVER, in lat. 3° 37′ S. bears *true* N. by E. from Mombas, distant about 9 leagues, having soundings of 10 fathoms close to the entrance: a reef which is steep to, lines

* Sandy Island, or Latham's Shoal, situated to the eastward of Zanzibar, has been described in the section, "Passage from the Comoro Islands toward India, &c."

the shore between these places. From Chenee River, the Coast takes a N. E. direction to the S. W. point of Formosa Bay, QUILIFE RIVER being situated in this part in lat. 3° 25′ S.; between these rivers the shore is bold to approach, but it becomes dangerous a little to the N. E. of Quilife River. Quilife River.

LEOPARD'S REEF, in lat. 3° 16′ S. lies about 7 leagues N. E. from the entrance of Quilife River, where H. M. S. Leopard was 6 hours aground, and nearly lost, 15th Feb. 1799. Steering S. W. by W. and W. S. W.; the land was seen at 3 A. M., sounded in 13 fathoms, and afterward struck, in hauling out to S. Eastward. Leopard's Reef.

After floating at 9 A. M. she anchored in 17 fathoms fine white sand, a little to the S. Eastward of the reef, where the lat. observed at noon was 3° 18′ S., the southern extreme of the land then bore W. by S., the northern extreme supposed to be the south point of Formosa Bay, N. by E. 6 leagues, and an island having a pagoda,* or sea mark on it, N. W. by N. distant 5 miles. This reef extended about N. N. E. and S. S. W., having high breakers on the shoal parts, and terminated at the main. All the shore in sight to the westward, seemed to be bounded by other reefs, parallel to that mentioned, and were nearly dry. Other reefs near it.

FORMOSA BAY, is about 7 leagues in breadth, and 3 or 4 leagues deep, having soundings in it of various depths, from 25 to 8 and 10 fathoms; the southern point of this bay is not far from the town of Melinda, and agreeably to observations taken in the Leopard, is situated in lat. 3° 00′ S., lon. 41° 2′ E.; the north point of the bay in lat. 2° 39′ S., lon. 41° 21′ E. by chronometer: but Capt. Smee's observations, make this place (like the rest of the coast) much farther to the westward. Formosa Bay. Geo. situ.

From the north point of Formosa Bay, the coast extends in a N. N. E. direction, about 13 leagues to Patta; all the land hereabout is low, and to the southward of Patta, there is a chain consisting of 5 islands, covered with trees. The coast from hence to Patta.

PATTA, or PATTE TOWN, in lat. 2° 10′ S. lon. 41° 18′ E., is situated at the west end of an island of considerable extent, formed by a narrow arm of the sea, which separates it from the main land. Toward the sea, this place is protected by extensive reefs, which stretch along shore at the distance of 3 leagues from the island, having narrow passages between some of them. The middle one, has 2½ or 3 fathoms water in it, and was frequented by English ships formerly, when they traded to this place for cowries, ivory, &c. The Portuguese used the channel that lies 4 miles more to the westward; and opposite to the eastern part of the Island, there is a winding channel with 3 fathoms on the bar, and deeper water inside, said to be very dangerous† from April to the latter end of August. About 3 or 4 leagues to the N. Eastward of this channel, is the road of Guieu, where ships anchor in 12 fathoms, sandy ground, and must get a pilot from an island about 3 miles to the westward, before they can proceed to Patta, all the channels being intricate and dangerous; there is generally a high surf beating against the reefs, and a heavy swell rolling into the different channels, particularly from April to August. The western channel, opposite to the west end of Patta, formed between the Island Mandra, and the western part of the reefs, is wide, but no vessel can pass out from it, on account of the great swell during the season mentioned Patta Harbour, and the channels.

* This is called Gomaney Pagoda by Capt. Smee, who made a survey of the Coast in 1811, and states it to be on a point of the main; he places the Leopard's Reef in lat. 3° 15′ S., and says that a ridge of high land is in one with the reef bearing W. by N. ½ N. Quilife, or Quiliffee River, he made in lat. 3° 26′ S., describes it to be large, with a bold shore near it, without soundings.

† The Ternate went in by this channel in 1811, and came out by the middle channel, where not more than 2 or 2½ fathoms could be found. The chief of Patta endeavoured to deceive Capt. Smee, although he had a letter from the Bombay government; and after several days delay, with some apprehension for the safety of his vessel, he was forced to leave this unfriendly place without obtaining any supplies.

above: the Pesarly Rocks are above water, fronting the sea at the S. Western edge of the reefs.

The soundings are 30 and 32 fathoms about 5 or 6 miles outside the reefs, and 9 or 10 fathoms, close to them. Inside, near the inner edges, the general depths are from 5 to 7 fathoms, shoaling toward the island. The proper anchorage is within the reefs, about 8 miles to the westward of the Eastern Channel, at the Island Kringetty, in lat. 2° 8′ S. which lies to the east of Patta.

Geo. site of Patta and Guieu. It is high water at 4½ hours, at full and change of the moon, rise of tide 9 feet. The observations taken in the Leopard, passing in 1799, place Patta Town in lat. 2° 2′ S., Guieu Town in 1° 52′ S., lon. 41° 24′ E. by chronometer, but the latitude stated above from Capt. Smee's observations at Patta, is probably more correct.

Coast from hence to the Equator. From Guieu to the Equator, the coast is fortified by a chain of islands, which in some places may be mistaken for the main land; there are also reefs stretching out from many of the islands, and fine bays among them. From lat. 1° 2′ S. to 0° 22′ S. a coral bank extends along the irregular chain of islands, that fronts the coast; the outer edge of it is about 4 and 5 miles from the shore, and is steep to, the depth decreasing from 20 to 13 fathoms at one cast in standing on it, when a ship should immediately tack.

Island Cuama. CUAMA, OR KIAMA ISLAND, in lat. about 0° 44′ S., is known by two remarkable trees on it, seen at a considerable distance; more to the northward, there is another island, having on it 3 white patches, and within these islands there is a spacious bay about 3 or 4 leagues deep, having regular soundings in it from 7 to 5 fathoms, sandy bottom.

Bay near it.

Dædalus Shoal. DÆDALUS SHOAL, about 4 leagues S. S. W. ward from Joob River, consists of coral rocks, on which H. M. S. Dædalus struck in standing out from the shore; they had from 16 to 10, 6, and 4 fathoms, then struck three times very hard, and by the swell running high she was lifted over the rocks, (plainly seen along side) into 14 fathoms water. This danger is in lat. 0° 23′ S., lon. 43° 04′ E. by chronometer, 4 or 5 miles off shore, near some islands which form a bay within them; when the ship struck, the body of these Islands bore W. ¼ S. distant 4 or 5 miles. The coast hereabout is low, with sand hills facing the sea in many places, and the surf runs high upon the shore, except where it is sheltered by islands or projecting headlands.

Govind River and Juba Town. GOVIND RIVER, called JOOB by the Arabs, also ROGUE'S RIVER, or RIO DOS FUEGOS, on the coast of Ajan, has Juba Town at the entrance, situated in lat. 0° 12′ S., lon. 43° 2′ E.* by observations taken in the Leopard and Dædalus. This town is

Geo. site. composed of a few huts situated on an eminence near the side of the river, at the entrance of which there is a bar, where the surf beats high. It is high water at 4½ hours, on full and change of the moon, and the tide rises 9 or 10 feet: the variation in 1798, was 12½° W. Boats may pass over the bar at high water, during the fair season, but the perfidy of

The Natives hostile to Europeans. the natives, should exclude European ships from this place. The ships already mentioned, being very short of water, anchored here in December 1798, expecting to procure a supply of this necessary article, or other refreshments; two boats upset in the surf, and although the natives at first appeared in a supplicating manner, they soon collected in numbers from behind the sand hills, assaulted with their spears the boat's crew, and killed Lt. Mears with several of the men. Excepting those that were killed, and two that were taken and made captives,†

* Capt. Smee makes it in lon. 42° 45′ E. or 1° 24′ West of Brava by chronometer.

† When the Leopard and Dædalus were at Zanzibar, procuring water and provisions, intelligence was received by the Arab coasting vessels, that there were two Europeans alive at Juba, and on the returning passage up the coast toward the Red Sea, the ships anchored off Rogue's River, and with great difficulty recovered these two men, after giving the savages arms, ammunition, and other things, to obtain their release.

the remainder of the crews were chased by the savages along the beach 8 or 9 miles distance to the southward, and taken up after sun-set in a small bay by one of the boats that followed them along the beach. It was off the three islands which form this small bay, where the Dædalus struck on the coral shoal, after having run down to pick up the boat containing the men who escaped the massacre.

Currents and Winds on this coast.

In the latter part of November, December, January, and part of February, the currents set along this coast to the W. S. W. and S. Westward, frequently 2 miles an hour, and the wind prevailed generally fresh at E. S. E. veering 2 or 3 points at times. These ships continued to beat close to the coast, during the time mentioned above, between lat. 1° N. and 1° S. Had they stood out into the open ocean, most probably they would have got out of the strong current, which runs along the coast in soundings, and have been able to beat up to the Red Sea against the monsoon. Between Zanzibar and the equator, the current in March, began to set to the N. Eastward.

A remark.

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# *COAST OF AFRICA, FROM THE EQUATOR,*

## TO CAPE GUARDAFUI; AND THE ISLAND SOCOTRA.

Coast from the Govind River to Brava.

FROM the entrance of Govind River, to the town of Brava, the coast extends nearly N. E. (*true bearing*) the distance about 36 leagues. This part of it is generally low and sandy, with a high surf beating against the shore, but the soundings along it are more regular than on the coast of Zanzibar; and ships may approach it in many places within 2 or 3 miles of the shore.

Geo. site of Brava.

BRAVA, in lat. 1° 8′ N., lon. 44° 10′ E. by ☉ ☽ and chronometer, is a town close to the sea, belonging to the Arabs, and seems well built; close to it lie several small islets or rocks which break off the sea, and there is an adjacent pagoda or tower, resembling a lighthouse. Inside of them the country boats lie sheltered; ships may anchor outside in 7 or 8 fathoms water, or in a greater depth, but the road is exposed to a heavy swell, which rolls in with winds from seaward. Cattle and goats were seen to the southward of this place, and on other parts of the coast, but none were observed at Govind River, although they appeared in abundance 15 or 16 leagues to the southward of that place.

About 10 leagues to the S. W. of Brava, there are several high white sand patches near the shore. The variation here was 15° W. in 1811.

From Brava, the coast extends nearly E. N. E. (*true bearing*) about 38 leagues to Magadosha. Between them, the coast is bold to approach, sterile, sandy, destitute of trees, with a few islands near it in some parts; but it abounds with cattle and goats, and has the towns of Marea, Meshir, Coriallee, Dunnana, and Gezira, the latter in lat. 1° 54′ N. and nearest to Magadosha.

Geo. site of Magadoxa.

MAGADOXA, or MAGADOSHA, in lat. 2° 5′ N. lon. 45° 49′ E., by chronometer, or 5° 44′ West of Cape Guardafui, is the principal town on this part of the coast of Africa, and easily known by 3 remarkable mosques or pagodas in the middle of it, resembling towers; there is also to the eastward of the town, a large copse of trees, but no river. A reef of coral rocks front the town, having a sandy beach inside of it; no ground at the distance of 3 miles from the shore. In 1700, the Albemarle anchored in 30 fathoms to the eastward of Magadosha, in sight of the town. She sent a boat on shore which was seized by the natives,

and they fired on the long boat, whilst endeavouring to open a communication with them. The inhabitants of these towns, like those of Juba, may be considered hostile to Europeans.

Coast from hence to Cape Bassas.

From Magadosha, to Cape Bassas, the distance is about 80 leagues, and the general direction of the coast about N. E. *true bearing*, but the various indentations and bays, make it deviate from this direction in several places; particularly in the first 20 leagues to the eastward of Magadosha, the *true* bearing is about E. N. E., the variation being 10° 40′ W. in 1811.

To the N. E. of Magadosha there is a bay, with white sand hills, and a range of small islands, steep to, near the shore. Farther to the eastward there is another bay, with white sand hills, and a bank lines the shore along this part of the coast, having on it very irregular soundings. A ship in standing on the edge of this bank, should tack immediately after getting soundings, for the depth decreases suddenly from 40 to 10, 5, and 3 fathoms coral, in some places. The whole of the coast is in general a sandy soil, rather low and sterile. The prevailing winds in March, are from S. E. and E. S. E., the current then changes, and sets afterward to the E. N. Eastward.

A steep bank fronts the shore.

Ternate's Shoal.

TERNATE'S SHOAL, in lat. 3° 15′ N., projects about 2 or 3 miles from the shore, which the ship of this name, nearly ran upon in 1811; she had soundings of 18 and 20 fathoms near it on the outside, and the sea breaking upon the shoal, first pointed it out, which danger stretches out from a point of low land, otherwise destitute of any distinguishing marks.

Between Ternate's Shoal and Cape Bassas, the Coast is mostly low with soundings close to the shore; the entrance of the *doubtful* River Doara, is supposed to be in lat. about 4° N., but no indication of a River appeared to Captain Smee in this situation, although cattle and natives were seen from the ship, when sailing near the coast.

Doara River.

Geo. site of Cape Bassas.

CAPE BASSAS, in lat. about 4° 50′ N. and lon. about 48° 49′ E.* has low land on the south, but more elevated land, close on its northern side, which may be seen at the distance of 9 or 10 leagues; it is named from a reef that projects about a league out into the sea, and extending 2 or 2½ leagues along the shore, which may be discerned in bad weather, by the breakers. The Ternate had soundings of 20 and 30 fathoms in coasting along near the Cape, and made the variation 9° 30′ W. in 1811.

Coast from it to the northward.

At Cape Bassas, the coast takes a direction more northerly, about N. N. E. ½ E. and N. N. E. to 8° of north lat. In this space, the land is of moderate height in general, with low land and trees in some parts, and white sand hills fronting the sea. It may be discerned from 5 or 6, to 8 or 9 leagues off, and seems clear of danger, with few bays or undulations; but there are in some parts, soundings at a considerable distance from the coast, in lat. 6° 45′ N., about 50 fathoms, sandy bottom, 4 or 5 leagues off shore; and at the distance of 3 to 4 leagues, the general depths are 20 to 30 or 40 fathoms.

Geo. site of Moro Cobir Point.

RAS-EL-KIRE, OR MORO COBIR POINT, (i.e. Serpent's Head) situated in lat. about 8° 30′ N., lon. 50° 45′ E. by chronometer, is a bluff headland, forming the south extreme of Bandel d' Agoa, or Negro Bay. The land hereabout is moderately high and even, the variation 8° 10′ W. in 1799. From Cape Bassas to this place, the coast is generally sterile, and has an even appearance, but is little frequented by Europeans.

Geo. site of Cape Delgado.

CAPE DELGADO NORTH, in lat. about 10° 0′ N., lon. 51° 17′ E. by chronometer, is moderately high land, and may be seen at the distance of 12 or 14 leagues; it has a few white

* Observations taken in H. M. ship Leopard, by ☉ ☾ and chronometers, made Cape Bassas, in lon. 49° 20′ E. Capt. Smee's observations in 1811, taken in the Ternate, made it only in lon. 48° 18′ E. and 3° 7′ W. of Cape Guardafui by chronometer; the mean of these, is 48° 49′ E., as stated above, corresponding nearly with observations taken in the Marian, in 1809.

spots at the lower part, and some openings. About 4 leagues to the southward, there is a projecting point of land, between which and the Cape, a large bay is formed. This should not be entered, for it is imperfectly known, and the S. E. winds might render it difficult to get out, were a ship to be embayed.

HAFOON, OR CAPE ORFUI, in lat. from 10° 18′ to 10° 26′ N., lon. 51° 38½′ E. by chronometer, or 5 miles east of Cape Guardafui, appears like a very high Island, ending in a steep point to the northward; and in approaching it from the southward, has the aspect of an Island sloping to seaward. To the S. Westward of this Cape, there is a part of the land high, flat like a barn; this appears at a distance separated from the Cape land, the space between them being low. Barn Hill is in lat. 10° 17′ N., lon. 51° 30′ E. by chronometer. Between Cape Delgado and Cape Orfui, the coast takes a circular direction, by which a deep bay is formed: several ships bound to the Red Sea, with provisions and necessaries, and some with *water* for the troops employed on the expedition to Egypt, got into the bay to the southward of Cape Orfui, in 1800, and 1801. One of these, a ship belonging to Bengal, got into this bay in the night, and was lost; the commander Capt. Baird, and the crew, were supposed to have perished. The Jehanghire, and other ships from Bombay, also got into this bay in the night, when steering to make the land about Cape Orfui, and with great difficulty got clear of it, by carrying a press of sail. The Mornington, June 21st, 1801, at sun-set had the land bearing from S. W. by W. to N. by W. distant 7 or 8 leagues; steering N. by E. and N. by E. ½ E. at 11 P. M. shoaled the water, and hauled out E. by S.; at 1 A. M. the land was seen right a-head E. by S. wore and stood W. S. W. 6 miles, then tacked and lay up E. S. E. with the wind at south. When day-light appeared, found they had entered a deep bay, the eastern extremity of it, Cape Orfui, bearing then E. N. E. This Cape being a peninsula, a large bay is formed on each side of it.

Geo. site of Cape Orfui.

Geo. site of Barn Hill. Deep Bay to the S. W. of Cape Orfui.

Dangerous to approach in the night.

These examples, are sufficient to evince the propriety of ships steering for this part of the coast, to be cautious in thick weather, or during the night.

In rounding Cape Orfui, 3 projecting headlands are perceived, stretching nearly north and south, 2½ or 3 leagues; the middle of these, stretches farthest out, and is the easternmost part of Africa. The land about the Cape is even, without any mark, excepting the low space between it and Barn Hill. The soundings about 3 miles off, are 40 fathoms; variation about 7° W. in 1811.

RAS GARDAFUI, OR CAPE GUARDAFUI, the north-easternmost promontory of Africa, is distant from Cape Orfui, about 30 leagues, bearing a little to the westward of *true* north, but on the north side of the latter, the coast turns sharp round to the westward, by which a large bay, or bight is formed, having a scraggy bluff headland at its north part: between this headland and Cape Guardafui, the coast extends to the eastward of a meridian line, forming a small bay, with soundings near the coast between Capes Orfui and Guardafui.

Cape Guardafui, and the coast between it and Cape Orfui.

The land around Cape Guardafui, is higher than the other headlands on the east coast of Africa, and to the southward of the Cape, there is a high mountain that may be seen a great distance. Between them the land is craggy at the top, with some low even land underneath, which appears separated from it, and forms like double land. From hence the declivity towards the Cape forms several notches, at regular distances, which appear like steps, and make the cape easily known. The shores around it are bold, with soundings when well in with the coast, 40 to 60 fathoms about 2 leagues off shore, from Cape Orfui to Cape Guardafui. The Blenhein, in 1710, had 15 fathoms, fine white sand, with the outer point of Cape Guardafui, bearing south, distant 4 miles; and the Susannah, got close to the Cape, into 10 fathoms in the night.

The observations of many navigators agree, in placing Cape Guardafui in lat. 11° 50′ N., and in lon. 51° 32′ E. by mean of many lunar observations and chronometers. Variation

Geo. site of Cape Guardafui.

$6\frac{1}{2}$° W. in 1811. Several persons have made this Cape 21° $25\frac{1}{2}'$ West of Bombay by chronometers, or in lon. 51° 32′ E.; but in 1811, Captain Smee made it 21° 29′ W. from Bombay, by chronometers, which would place it $3\frac{1}{2}$ miles more to the west, if correct. The same officer places the Cape 5 miles farther south than the lat. stated above, but the former is probably nearest the truth, being a near agreement of many ships observations.

Island Socotra.

SOCOTRA ISLAND, OR ZOCOTRA, extends nearly E. and W. about 27 leagues, and is 6 or 7 leagues in breadth, generally composed of high mountainous land. When the high land at the east end of the Island bears either north or south, it resembles a Dolphin's nose; from hence, declining to the eastward about 3 miles, it terminates in a low point, having a reef of rocks projecting from it about 2 leagues to the eastward, nearly even with the water's edge, very dangerous to approach in the night.

There are 2 anchoring places, generally used according to the prevailing monsoon: that proper during the easterly monsoon, is on the S. W. side of the Island, at a part of the coast which extends about 9 or 10 leagues in a S. E. and N. W. direction. In sailing to this anchorage, if a ship be to the eastward of the Island, she may coast along the south side in 20 fathoms water, to the southern point, which is high and bluff. In this depth, the bottom is sandy, but in 15 fathoms, there are rocks and foul ground, improper for anchorage should it fall calm. Having passed this high bluff point, she ought to coast along in from 15 to 25 fathoms, until opposite to a high round hill in the middle of this part of the coast; near this, there is a smaller hill, with a gap in the middle, and when this last hill bears about north, she may anchor in 18 fathoms sandy ground. Provisions may be procured here, but the water is unpalatable. In the vicinity of this place, some may be obtained of a better quality, though with great difficulty.

How to sail to the S. Western anchorage.

Tamarida Bay.

Tamarida Bay on the N. E. side of the Island, where the chief resides, distant 9 or 10 leagues from the East Cape, is the most eligible place for getting refreshments, but the anchorage is indifferent.* This place is known by a point of sand, that forms the eastern extreme of the bay, and when past this point the town is perceived, opposite to which is the anchorage, about 1 or $1\frac{1}{2}$ mile off shore in 10 to 13 fathoms sand and coral, with the town S. or S. by W. On the north coast, in coming from the east toward Tamarida Bay, 2 white sand hills may be perceived, the westernmost of which is much the largest, and about 4 miles to the westward of it, the town is situated, under the highest craggy part of the land resembling chimnies, and visible 7 leagues off. When this bay is approached in the S. W. monsoon, the coast should be kept a-board from the east end of the Island, as the wind blows in gusts off the high land, but the low point on the east side of the bay, must have a birth in passing. When the Island bore S. S. W. to Westward, off shore about 3 leagues, no ground could be got with 70 fathoms line, but when past the east point of Tamarida Bay, there are 30 fathoms about 5 leagues off shore, and gradual soundings to 8 or 6 fathoms, the town bearing S. Westerly, with very high land over it, in notches like chimnies. Bullocks, goats, sheep, and fish, may be procured here at reasonable prices, and good water; this runs from the mountains into a sandy valley among date trees, about $\frac{1}{4}$ of a mile from the town. Captain Tait of H. M. S. Grampus, made the anchorage in lat. 12° 39′ N., Captain Pavin, made it lately in lat. 12° 41′ N. and it is in lon. about 54° 23′ E.

The natives are poor, and have been in general hospitable to strangers: rice is an essential article to barter with them for refreshments. Good aloes may be procured, and at times, dragon's blood in small quantities; grapes, water-melons, pumpkins, oranges, and plantains, may be got in March and April, and plenty of dates in June.

There are other places where ships may anchor, exclusive of those already mentioned, particularly in a bay at the N. W. end of the Island, where there is a small rivulet. On

* On the 9th of October, 1701, the Discovery Indiaman, anchored in 6 fathoms sandy bottom, with the town of Tamarida bearing S. S. W. distant 1 mile, the easternmost point E. by N. $\frac{1}{2}$ N. 3 leagues, and the western part of the Island in sight W. N. W. distant 8 leagues. Variation about $\frac{3}{4}$ of a point westerly at this time.

both the north and south coasts of this Island, soundings of moderate depths are found, decreasing pretty regularly toward the shore.

The east Cape of Socotra is in lat. 12° 30′ N. lon. 54° 52′ E. or 3° 20′ E. of Cape Guardafui, and 18° 5½′ W. of Bombay, by chronometers; the west end is in nearly the same latitude, and in lon. 53° 32′ E. or 1° 20′ W. from the East Cape, and 2° 0′ E. of Cape Guardafui, by chronometers. The southern extremity of the Island is in lat. 12° 13′ N. and the body of it in 12° 22′ N. Geo. site.

ABD-UL-CURIA, in lat. 12° 5′ N. lon. 52° 32′ E., situated nearly mid-way betwen the west end of Socotra and Cape Guardafui, is a high rugged Island of square form, about 3½ or 4 leagues in extent, with 2 hills near the centre, giving it the appearance of separate Islands when seen at a great distance. It is inhabited, said to afford good water, and the Ternate saw a bay or concavity on the west side of the Island, but no soundings were obtained within 3 miles of the southern coast, in passing along. This Island is much larger, than hitherto supposed by geographers. Geo. site of Abd-ul-curia.

BROTHERS, are 2 barren rocks, about 2 or 3 miles in length, situated nearly N. W. and S. E. of each other about 5 miles distant, and distant about 5 leagues from the S. W. part of Socotra. The eastern one called Duraja by the Arabs, is highest, and bears North by compass, when on a transit line with the western end of Socotra: the other is called Sumtra, and the soundings increase regularly from the south coast of Socotra to these Islands; but if 2½ or 3 leagues to the southward of them, in steering to the westward, you get off the bank of soundings when the westernmost Brother bears north. Brothers.

A large ship should not venture to pass between the Brothers, for Captain Isbister, in the Surat Castle, in 1805, endeavouring to do so, got soon into 6 fathoms coral rocks with strong ripplings, and a turbulent swell, produced by the current, which made it prudent to relinquish the attempt. Passage between them perhaps dangerous.

SABOYNA ROCKS, OR WHITE* ROCKS, distant about 4 or 5 leagues from the N. W. point of Socotra, resemble 2 ships under sail, when seen at a moderate distance, being of considerable height. The channel between these rocks and Socotra is very safe. Saboyna Rocks.

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## *COAST of AFRICA, from CAPE GUARDAFUI, to the STRAITS of BAB-EL-MANDEB,*

### WITH SAILING DIRECTIONS.

FROM CAPE GUARDAFUI, the coast extends about 14½ leagues *true* W. by N. to Cape Felix; the land fronting the sea, continuing high and steep to 9 or 10 leagues distance from the former Cape, then it is a low barren plain for 4 or 5 leagues to Cape Felix, but inland Coast from Cape Guardafui, westward.

* In Salte's voyage to Abyssinia, a high White Rock is stated to lie in lat. about 12° 27′ N., distant about 6 leagues north of Abd-ul curia, seen in the Marian at 11 A. M. 7th of July, 1810, about 4 miles distant when passing between it and that Island. If this was really a rock seen in the Marian, it must lie about 14 or 15 leagues to the west of the Saboyna Rocks, and could not be mistaken for the latter. But as many ships belonging to Surat and Bombay, pass in a direct line between the west end of Socotra and Cape Guardafui, it is remarkable that such rock had not been previously discovered. I have examined some journals of ships, which appear to have passed directly over the situation assigned to this *doubtful* rock, as stated above.

the country is mountainous. Between these Capes, soundings are generally got within 2, 3, and 4 miles of the shore.

Admiral Beaulieu, in August, 1619, anchored in 6 fathoms rocky ground, about 4 leagues west of Cape Guardafui, opposite to some green shrubs, which are very uncommon on this coast. Here, plenty of water was found on digging 1 or 2 feet deep, which was at first sweet, but after filling a short time, it became very salt, obliging them to dig in more than 70 different places, to obtain 22 tons of water, which with 30 men sent on shore for the purpose, was done in 4 hours, the soil being sand. They had before, anchored in 9 fathoms, a little to the westward of Cape Guardafui.

Water procured.

There are 3 high headlands between this Cape and Cape Felix, and a little to the east of the 2d point or headland, the Arabia Merchant's boat landed on the 2d of June, 1705, where they found straggling huts in 3 places forming small villages, the inhabitants of which were friendly,* and bartered some fish (their chief food) for tobacco, beads, knives, &c. and they shewed a watering-place to the boat's crew.

Natives poor.

On the following day, the boat landed, with suitable articles to purchase what could be got, farther westward; she returned with 8 sheep and lambs, all with black heads, having also in a former voyage, procured sheep here, with the same marks.

Low Point and Shoal.

LOW POINT, situated about 5 leagues to the eastward of Cape Felix, projects considerably, forming a deep bay on each side, with a shoal spit extending from the point, which ought to have a birth in passing. The Marian, at midnight 29th of September, 1809, had 10 fathoms water on this shoal, Mount Felix bearing W. by S. ½ S., distant about 5 leagues.

On the 3d of June, 1705, the Arabia Merchant, steering for this low point about W. N. W., running along shore in 8 fathoms water, discerned the white sandy ground under the bottom, then to the eastward of the point. In the bay between Low Point and Cape Felix, regular soundings extend 4 or 5 miles off shore, with anchorage in 8 fathoms sand about a mile from it; the surrounding coast is low near the sea.

Current.

Dr. Vincent, in his observations on this part of the coast, (as noticed by Mr. Salte in his voyage to Abyssinia) states, that the current runs out of this gulf during the wane of the moon, and into it, during her increase, which seems to agree with the remarks of some navigators. But after the 1st of August, the current sets generally strong along the coast to the westward, nearly to the Bay Zeyla, often at the rate of 2½ or 3 miles an hour, near the shore.

Geo. site of Cape Felix;

RAS FELUK,† OR CAPE FELIX, in lat. about 12° 0′ N. lon. 50° 50′ E. or 42 miles west of Cape Guardafui by chronometer, is a high steep cliff of regular shape, projecting far into the sea, and the circumjacent land being low, gives it the appearance of an Island, whether viewed from the east or westward; it may be seen at 15 leagues distance in clear weather, and there is very deep water within a ¼ mile of it on the outside.

Probably an Island.

It will be seen from the following remarks, taken from original journals, that Mount Felix is *probably* insulated by an arm of the sea.

Captain Saris, in 1612, states, that on the west side of Cape Felix, there is a passage up

* About a century back, it appears by the journals of the Company's ships, that the native Somaulees of this coast, were of the negro cast, as they are at present; but at that time, they frequently came off in their canoes, to ships passing along the coast, with fish, fishing lines, and sometimes a few goats or fowls. From what little we know of them at present, they are less friendly, and not to be trusted; the crew of a ship, which was recently wrecked in the deep bay on the south side of Cape Orfui, mostly all perished by hunger, or by the inhumanity of the natives, in attempting to pass through this desert country toward Zeyla. And even in the beginning of the 18th century, a French ship's boat had 7 men killed by the natives in landing on this coast, but in this instance, they had landed before, and given umbrage to these Africans.

† It is called also Mount Felix, and Mr. Salt observes, that it might with more propriety be called Mount Elephant, from the Arabic "*Ras-el-Feel*," which is its true name, being the Elephas Mons, also, of the Romans.

to a town, so wide that 3 ships may go abreast without danger, where he got plenty of wood and water, which is situated between Mount Felix and a low sandy point to the westward. Water said to be got to the westward of it.

Arabia Merchant's journal, 4th of June 1705, describes a low sandy point, or spit, to bear W. by S. 3 leagues distant trom Mount Felix, betwixt which is a bay with fresh water, and inhabitants, as they were informed by the natives.

Discovery from Mocha, 1st of October, 1701, sent her boat in shore, and the officer saw an inlet or river about 2 miles to the west of Mount Felix, with the tide running out of it, but the water was salt. He was informed by one of the natives, an old man, who ventured to approach the boat, that there was a tank of fresh water by the side of the river, and that they had goats and fowls for sale, but the officer did not put confidence in this information, although he had a linguist in the boat. The officer, represented Mount Felix to be environed by the sea, he having gone round it, 2 leagues to the eastward; and in the journal of 1 of the following days, it is stated, that about 4 leagues to the west of the Mount, he saw the *break* in the shore, where there runs a quantity of water out of the sea, which *vomited* itself on the east side of Mount Felix.

RAS GOREE, OR CAPE ST. PETER, in lat. about 11° 37′ N. distant about 16 or 17 leagues W. S. Westward of Mount Felix, seems to be the 4th headland from the latter, the 1st being a low sandy spit, about 3 leagues to the westward of the Mount, with soundings between them from 14 to 6 fathoms near the shore, on which account, the lead should be kept going in passing, and until clear of the low sandy spit or point, the shore ought not to be approached nearer than 2 or 3 miles. The next headland is about 4 leagues farther west, in a bay; the 3d headland is about 12 leagues from Mount Felix, the coast between them forming a concavity, being low to the distance of 5 leagues from the latter, then high for 5 or 6 leagues, terminating in a plain of middling height, which extends about 2 leagues W. by S. From the west end of this plain to Cape St. Peter, distant about 6 leagues, the coast is high, fronting a chain of rugged mountains; and about 2 leagues to the east of this Cape, there is a white patch like a small sandy bay,* having to the westward a small river. Ras Goree and adjacent coast.

METTE ISLAND, in lat. 11° 21′ N., lon. 48° 58′ E., or 2° 24′ West of Cape Guardafui by chronometer, bears about W. by S. from Cape St. Peter, distant 20 or 21 leagues: the coast between them forms a bight, is moderately elevated, and very uneven.—Inland there are high mountains, and in lat. 11° 18′ N. about 7 or 8 leagues to the eastward of this Island, close to the sea in a bight there is a Somaulee Village, with soundings extending out several miles from the shore. Geo. site of the Island Mette.

About 3 leagues eastward from Mette Island, there is a peninsula of moderate height, covered with hummocks, which appear separated: Between this peninsula and the Island there is a bight, the shore of which is not high, but the ridge of mountains continues inland. The Island is of middling height, the highest hill on it resembling a cap or bonnet; and the interior of it, and all the coast adjacent, appears arid and sterile.

AIS, OR BURNT ISLAND,† called also Bird Island, or White Island, in lat. 11° 14′ N. lon. 47° 28′ E. or 4° 4′ West of Cape Guardafui by chronometers, and distant 27 or 28 Geo. site of Burnt Island.

* It was probably near this place where a Portuguese frigate was wrecked in a bight near Cape St. Peter, in July, 1801, and part of the crew taken up by the Mornington.

The Discovery, on the 18th of September, 1701, anchored about 12 leagues to the westward of Mount Felix in 12 fathoms white sand, where some of the natives spoke Arabic, who informed the Discovery's people, that 2 Surat ships had been lost there, another captured by the pirates, and that they had no refreshments excepting a little salt-fish.

† About a century ago, it was called sometimes Lakorgee, said to be the name applied to it by the Moors.

In lat. 11° 12′ N. about 7 leagues east of Burnt Island, the Phœnix and other ships, anchored about 3 miles off shore in 12 fathoms, where they lay a few days to repair the damage sustained by strong westerly gales, while beating up toward the Red Sea in July, 1801.

leagues to the west of Mette Island, is a high barren rock of white aspect, being covered with birds dung.

The coast between it and Mette Island is moderately elevated, with soundings near it, and the channel between Burnt Island and the main is about 3 leagues wide, with depths of 14 and 15 fathoms, and free from danger.

Fresh water and safe anhcoarge.

Capt. Thomas, of the Cecilia, landed on this Island in 1801, and found a spring of water on its southern part, near the centre of the Island; the water ouzes out of the crevices of the rock, forming a small pool at the foot of the precipice, and with very little trouble, a ship in want of water might obtain a supply, as there is good anchorage in sandy bottom opposite to the spot, and from thence round the east point of the Island, so that a ship may anchor in safety, and avoid the strong westerly gales.

There was also found a remarkable cove, or rather a natural dock, sufficiently large to admit a ship of 300 tons in security, by clinching the ends of a cable through the holes of the rock, and the remains of 2 clinches of cables were really affixed to the rock at this time.

There appears to be no danger near the Island, except at the western point, where a reef projects out about a cable's length, with a sunken rock, having over it only 12 feet water.

Village.

SOMAULEE VILLAGE, is situated in lat. 11° 9′ N. about 3 leagues to the S. Westward of Burnt Island, and here, the soundings do not extend far from the coast, which from this place, begins to take a more southerly direction, about W. by S. and W. by S. ½ S., high scraggy double land: and about 16 or 18 leagues westward from Burnt Island, the coast trends still more to the south of west, the land continuing high, scraggy and double, destitute of soundings excepting near the shore.

About half way between Burnt Island and Berbora, there is a projecting headland, called Ras Kurrum.

Geo. site of Berbora.

BERBERA, OR BURBUREEA, in lat. about 10° 22′ N. lon. 45° 10′ E., is situated at the bottom of one of the most considerable bays on this coast, bounded on the N. E. side by a projecting headland with a reef stretching around it. This place, although not known to Europeans, is frequented by small trading vessels from the coast of Arabia and the adjacent parts, and it is said to afford good shelter, particularly to small vessels, but the natives ought not to be trusted. Caravans, pass between this port and the interior of Abyssinia, to the westward and N. W.

From Berbera the coast extends westerly, then W. N. W. and N. N. W. to Kurrum Sheik, a headland, in lat. about 11° N., supposed to be fronted by shoals, having several bays or inlets between it and the former place, very little known. From Kurrum Sheik, the coast turns again more to the westward, for a considerable distance, then N. W.ward to the eastern point and islands of Zeyla Bay, being low in some parts close to the sea, with soundings near the shore: but about half way between Berbera and Zeyla, there is a high mount near the coast, called Mount Elmas.

Geo. site of Zeyla.

ZEYLA, in lat. 11° 17′ N. lon. about 43° 5′ E. is a town of some importance, having a trade with Mocha and the neighbouring parts. H. M. Ship Sheerness, warped within some of the shoals of Zeyla Bay, and anchored near the town in 1800; having an Arab on board from Mocha as linguist, a treaty was made with the Chief of Zeyla, to supply sheep for the troops then at Mocha in transports, going on the expedition to Egypt, sheep being plentiful and cheap at Zeyla. The coast around this bay is low, fronted by extensive shoals to the North and N. W. about 3 leagues distance from Zeyla; the island Ivat, or Sheik Deeni, being at this distance in a northerly direction, with a shoal surrounding it. The island Sadduckdeen lies about mid-way between it and Zeyla, and there are other smaller isles to the

westward of these, near the shore. The anchorage for large ships at Zeyla, is about 3 or 4 miles N. N. E.ward of the town, to the eastward of the island Sadduckdeen, in 4½ or 5 fathoms water, and the fair channel is to the eastward of all the islands. The soundings here, extend a considerable distance out from the coast.

A ship touching here for refreshments, ought to be guarded against treachery, for the inhabitants of the whole of this coast to Cape Guardafui, and round to the southward, have had little intercourse with European navigators during a long period, and are thought to be less friendly at present than they were upward of a century ago, when European ships frequently obtained some refreshments in coasting along.

Ancient route to the Red Sea.

At that time, English ships bound to the Red Sea, often kept near the coast of Africa, till they got to the Straits of Bab-el-mandeb, and even in June, and July, made their passage by this route.

The Arabia Merchant, kept along the coast from Cape Guardafui, passed in sight of the islands in Zeyla Bay, and on the 16th of June, 1705, steering betwixt N. W. and North, in sight of the Abyssinian coast, very low land; with smoke in several places, got into 8 fathoms water, steered then north, with some hummocks seen a-head, which were on the main land, but mistaken for the islands at the entrance of the Straits, when at 5 P. M. the ship grounded about 4 or 5 miles off shore in lat. about 11° 38′ N., the soundings were very uneven, differing 2 and 3 fathoms at a cast.*

Shoal Coast to the north of Zeyla.

From the northern extremity of Zeyla Bay, the coast extends in a North and N. N. E. direction to Ras Bir, having the island Missah or Oboe close to it in lat. 12° N.; Ras Bir is the easternmost promontory of the coast in this part, situated in lat. about 12° 17′ N. from whence it takes a N. Westerly direction 5 or 6 leagues to the Eight Brothers, continuing the same direction to a considerable distance within the entrance of the Straits. From the above mentioned headland, the coast is mostly steep to the entrance of the Red Sea, there being 25 and 27 fathoms water within ½ a mile of the shore in some places.

Although formerly, ships kept along the African coast nearly to the entrance of the Red Sea, it is now the practice, to stretch off from it at Burnt Island, for the coast of Arabia about Cape Aden, or Cape Arimora.

## *COAST of ARABIA, from CAPE ADEN to MOCHA; and the STRAITS of BAB-EL-MANDEB.*

Geo. site of Cape Aden.

CAPE ADEN, in lat. 12° 43½′ N. lon. 45° 14′ E. by chronometers and lunar observations, is high and craggy, and appears like a high Island when seen from the westward, but resembles two Islands on a nearer approach. When bearing about N. E. it appears like a very rugged mountain, the southern extremity lower than the northern. To the N. W. of this cape there is a mountain about the same height, equally rugged, high on the S. E. side, and low to the N. Westward. Between these two mountains little hillocks are seen, which, at the distance of 8 or 9 leagues, resemble large rocks, the low land that forms their base, being then sunk under the horizon. Cape Aden is a peninsula, with a deep bay to the westward; and there is another bay a little farther west, between two headlands. The depths

* She hove off, at midnight, by an anchor laid out for that purpose, entered the Straits on the 20th, but having mostly N. W. winds and a strong current setting out of the Straits, she did not reach Mocha till the 27th of June. Greenwich, 6th April, 1724, was in lat. 22° S., carried steady winds between S. W. and S. E. through the Mozambique channel, passed to the west of Comoro at 8 leagues distance on the 12th, crossed the equator with southerly winds 18th, rounded Cape Guardafui 28th, and arrived at Mocha on the 6th of May.

are from 4 to 7 fathoms in these bays; and Back Bay, or that on the west side of Cape Aden, is a safe place in the easterly monsoon. On the 14th Nov. 1799, the Fox, Frigate, anchored in Aden Back Bay in 5 fathoms, with the pitch of the cape shut in, extremes of the land to the eastward from S. E. to N. E. by E. ½ E., off shore 1 mile. A smaller ship may anchor farther in, in 4 fathoms, and procure fresh water at the watering place, which is at the eastern extremity of the bay, behind the town of Aden.

Bay and Town.

On many of the craggy points over Cape Aden, there are small white buildings, or turrets which appear very remarkable. The bay and town are to the N. Eastward of the Cape, where ships lie sheltered from westerly winds; but this place affords very few refreshments, and the water is brackish, brought in skins to the beach, by the Arabs, who sell it, and they must be watched, or they will make it worse, by putting salt water with it when filled into the butts. A ship may anchor in 7 fathoms, with Cape Aden bearing about S. S. W., the Mosque touching the N. W. point of Fortified Island, (a black islet with a tower on its extremity, at the south part of the bay) and the extremes of the land from Cape Aden south, to north, about ⅝ of a mile from the Island; or she may anchor farther out, in deeper water, at discretion, the soundings being regular on this part of the coast. In the westerly monsoon, the ground tackle should be good to ride here, for it frequently blows hard, with a heavy sea setting into the road.

Anchorage.

Geo. site of Town.

Aden Town is in lat. about 12° 45′ N., and on the meridian of the Cape. A ship in rounding the cape, should come no nearer than 14 fathoms, then steer for the anchorage, keeping Fortified Island on the larboard bow, and not borrow under 7 or 8 fathoms. The tide rises 10 or 12 feet on the springs. Variation 8° 32′ West in 1811. The Fox, Frigate, 12th Nov. 1799, anchored in Aden Road in 8 fathoms, the town bearing W. by S., Cape Aden S. W. by S., off shore 1 mile.

Cape Arimora and the Coast between it and Cape Aden.

CAPE ARIMORA, of the Arabs, called also Cape St. Antonio, in lat. 12° 39′ N. bears from Cape Aden about W. ½ S., distant 20 or 21 leagues; the land between them is low near the sea, with some sand hills, until within 6 leagues of the low point of Cape Arimora, where there is another point, formed by a high mountain, that takes a direction inland to the N. Westward. This point is rugged, but the extremity of Cape Arimora is low, although the mountain over it is high, and generally set for the cape, when the distance off shore is considerable. A shoal projects to a considerable distance from the cape, which should not be approached nearer than 15 fathoms, and in working along the coast, it ought not to be borrowed on, under this depth. the bottom near the Cape is generally sand, and in some places coral rocks.

Although the coast between Capes Aden and Arimora, is safe to approach within a reasonable distance, affording some bays formed by bluff headlands, fit for occasional anchorage, yet, when the latter Cape is to be passed, it must have a good birth on account of the shoal mentioned above, and from hence to Cape Bab-el-mandeb, the coast must not be borrowed on too close.

Fox grounded near Cape Arimora.

On Nov. 9th, 1799, H. M. S. Fox, bound from Mocha to Aden for water, when working to windward, at 4 P. M. shoaled suddenly to 3 fathoms on a sand bank, and in wearing round, she struck lightly several times; when clear of the bank, Cape Arimora bore east by compass, distant 11 or 12 miles, then in 15 fathoms water, about 3 or 4 miles off the nearest shore.

The Coast from Cape Arimora to Cape Bab-el-mandeb.

CAPE BAB-EL-MANDEB, or BABELMANDEL, (i. e. The Gates of Death) bears from Cape Arimora about true W. 14 or 15 leagues. Between them, the land which forms a deep bay is low near the sea, but the ridge of mountains extends from Cape Arimora, to the N. W. till within 5 or 6 leagues of Cape Bab-el-mandeb, and is called the Chimney Hills. The land is low, to the eastward of the cape forming a deep bay, which has proved

fatal to several ships in the night, by mistaking it for the entrance of the strait. The Earl Mornington, on the 3d July, 1801, working toward Bab-el-mandeb with strong N. W. gales, shoaled fast at 11 P. M. when the helm was immediately put up, and in waring, she struck twice without grounding. They stood out into 12 fathoms, then anchored, and at day-light found they had been set by a strong weather current into the bay, to the eastward of Cape Bab-el-mandeb; and this has happened to many other ships. Ships running for the straits in the night, or in foggy weather, should therefore, guard against entering this bay, by mistaking Cape Bab-el-mandeb for the island of the same name, which has sometimes happened. To distinguish them, it must be remembered, that the cape makes like a gunner's quoin, and projects out a great way from the low land, which gives it the appearance of an island when seen at a distance. On the south side it is rocky and scraggy, and very barren around, the soil of a dark brown colour.*

Island and Harbour of Bab-el-mandeb, and to sail into it.

BAB-EL-MANDEB ISLAND, (called also Perim) is low, of an even appearance, having a gentle declivity from the middle toward the extremities, and is, like the Cape of the same name, quite barren, and of the same colour, but not near so high. This island is 2 or 3 miles long, and on the S. W. side has an opening into an excellent harbour or cove, having in it from 4 to 6 or 7 fathoms, where there is shelter mostly from all winds; but no water or refreshments to be had, as this sterile place is uninhabited. There is no danger in going into the harbour, but the entrance is rather too narrow for ships to turn in: the north side may be approached within 2 cables' lengths, and the southern shore within half a cable's length, the ground very good, and the harbour only open from W. to S. by E. When the wind is from southward, it is necessary to warp close over to the south shore, that a ship on making sail, may be able to weather the western point of the harbour. The variation here in 1799 was 8° 45′ W. The tide flows ½ past 11 at full and change of moon, and rises about 6 feet, but not very regular, the north winds keep it back, and southerly winds make it higher. This island is in lat. 12° 38′ N. and in lon. 43° 29′ E. by mean of many lunar observations and chronometers, determined during the expedition up the Red Sea, by different navigators.

Geo. site.

The Cape is in lat. 12° 40′ N. about 4 miles to the N. E. of the island, but the strait between them is contracted by shoal water, extending from the Cape to a small islet about a mile from it, called Pilot Island. This is called the LITTLE STRAIT, to distinguish it from that between the island Bab-el-mandeb and the Abyssinian shore, which is called the LARGE STRAIT. The little strait is mostly frequented, having moderate depths for anchorage, when circumstances render this necessary. In running for the Strait, when near the entrance, the depth decreases quickly from 30 and 28 to 13 and 10 fathoms; a ship should with a fair wind keep nearly in mid-channel, or rather nearest the island; and in passing through, there is no danger, although the depths are irregular from 14 to 9 fathoms coarse sand. There is a small bank at the north part of the strait, a little nearer the main than to the island, having on it 7 fathoms, where a few casts may be got in crossing over it, but there is no danger.

To sail through the Little Strait.

When a ship has passed through the strait, and uncertain of reaching Mocha with day-light, and finding the wind inclined to blow strong from the S. W. or southward, she ought to shut in the entrance of the strait, and anchor to the northward of Cape Bab-el-mandeb, where the water is smooth; as it may be difficult to bring up, should she anchor with the strait open,

A caution in sailing from the Strait toward Mocha.

* Capt. Ellis, of the Navy, says, a ship steering for the Little Strait, should keep the lead going, to prevent getting into the Bay to the Eastward, and steer for the outermost point till the Strait is open between the island and the main, then keep nearest the Island Bab-el-mandeb, till past Pilot Island, after which keep more to the eastward, to avoid a shoal that projects ⅓ds of a mile from the N. E. end of the Island Bab-el-mandeb. There is also a small knowl off this point, with 5 fathoms on it. The Large Strait is preferable to the small one in the night, particularly to a stranger.

or farther north toward Mocha. Or should she pass through the large strait in the middle or early part of the night, it will be prudent to haul in to the eastward and heave to, until day-light, taking care to keep near the Arabian shore, in soundings from 12 to 24 fathoms: this is preferable to anchoring, when blowing strong, as a ship might be liable to lose her anchor. The navigator must be on his guard not to overshoot this port, should he determine to run in the night; for the current sometimes sets strong to the northward, with the southerly winds, from the straits of Bab-el-mandeb along the Arabian coast to the northward.

Large Strait. LARGE STRAIT, is about 9 or 10 miles broad, having the Coast of Abyssinia to the westward, and the islands near that coast, (eight in number,) called the Eight Brothers, to the southward; with the Island Bab-el-mandeb bounding it to the eastward. Near the latter island, there are soundings, which do not extend far over, for none are got with 100 fathoms line in the middle of the strait; but close over to the Eight Brothers, and near the Abyssinian coast, there are soundings of various depths, generally from 30, to 16 and 20 fathoms sandy bottom, and sometimes mud.

As there is no anchorage in this strait, except near Bab-el-mandeb Island, or near the N. Westernmost of the Brothers, contiguous to the Abyssinian shore, the small strait is generally frequented by ships entering or departing from the Red Sea; but with a steady favorable wind, the Large Strait may be adopted at discretion, for a ship may run through this strait in the night, when it might be imprudent for a stranger to proceed through the other.

In passing through the large strait, a ship should borrow well over toward the Island Bab-el-mandeb, where she may anchor if the wind fail, and prevent being carried over to the Eight Brothers when the current is running to the southward. The Eight Brothers are of moderate height, and like the Cape and Island Bab-el-mandeb, are barren; but the soil is rather of a lighter colour.

Coasts within the Straits. When a ship has entered the Red Sea by either strait, she ought to steer along the Arabian Coast, not coming nearer it than 10 or 11 fathoms, on account of a small bank, 8 or 9 leagues to the northward of Cape Bab-el-mandeb, having 9 fathoms close to its western edge. The Abyssinian coast must be avoided, for in lat. 12° 56′ N. about 3½ leagues from this coast, there is a dangerous shoal, discovered by Captain C. Court in his survey of the Red Sea, and called by him the PANTHER'S SHOAL, which projects from a small island, the southernmost of a chain of islands fronting the Bay of Asab.* Between these islands and the main, shoal water extends across the Bay to Ras† Firmah, which is about 2 leagues to the northward of Asab Bay, with 3 hills near it, resembling in succession, a *saddle*, *paps*, and a *haycock*. There is also a small island close on the north side of Ras Firmah, having 8 fathoms water between them, which is called Crab Island. The chain of Islands fronting Asab Bay, is composed of low woody islands, and the shoal water, of which they are the outer limit, continues to extend from the Panther's Shoal about S. by E. to a point of land in lat. 12° 45′ N. This point has Table Land near it, and 2 islands called the Premeiras, (being the first within the Straits) to the south-eastward of it, about 2 miles from the shore.

Panther's Shoal.

Coast of Abyssinia around Asab Bay.

To avoid Panther's Shoal. The Panther's Shoal makes the channel between it and the Arabian shore narrower than had been before supposed: to avoid coming suddenly on the edge of this shoal, when stretching over toward the Abyssinian coast, the lead should be kept briskly going, particularly in the night or in hazy weather, and it should not be approached nearer than 19 fathoms.

Another shoal near Ras Firmah. There is another small shoal in lat. 13° 9′ N. about 3 leagues from Ras Firmah, which must be avoided; it is about 4 or 5 miles directly north from the chain of low woody islands, and has from 9 to 17 fathoms in a channel between it and the islands. Ships may anchor

* In July 1611, Sir Henry Middleton anchored in Asab Road, and got plenty of wood, water, and provisions.
† Ras i. e. Head, or Cape, in Arabic.

on the north side of these islands in strong southerly winds, or near Crab Island, opposite the Bay on the north side of Ras Firmah.

MOCHA, bears from Cape Bab-el-mandeb about N. by W. ½ W. *true bearing*, distant 13½ leagues, and excepting the small bank already mentioned, within the line of 9 fathoms water; the Arabian shore is safe to approach, the bottom generally sand and proper for anchorage. In steering along about N. by W. and N. N. W. *by compass*, a sand hill, called Zee Hill, will be seen close to the shore, which is nearly mid-way between the Straits and Mocha. About 8 miles farther there is the south end of a grove of Date Trees, which extends about 2 leagues along shore to the north toward Mocha, and is a good mark to shew the approach to that place, there being no other trees on the coast between it and the straits. There are mountains inland, but the coast near the sea is barren and low, except the sand hill mentioned above. Arabian coast, and to steer from the straits toward Mocha.

When a ship has coasted along in from 12 to 16 fathoms, about 1½ or 2 leagues off shore, and is abreast of the grove of Date Trees, she ought then, not to decrease the depth under 14 fathoms, on account of the shoals encompassing the southern part of the road: these are sand-banks having only 2 and 2½ fathoms water on them, and 10 fathoms close to their outer edges, being steep and dangerous. To steer round the sand heads into Mocha Road.

To avoid these shoals, a large ship in approaching Mocha from the southward, must not come under 14 fathoms till the spire or dome of the Great Mosque is brought to bear E. S. E.*, she is then to the northward of the sand head, and may haul up for the road, and anchor in any depth from 5 or 6 to 7 or 8 fathoms, with the Great Mosque about E. S. E., off shore 2½ to 3 miles. An experienced commander, advises to run along the edge of the shoals, in 10 or 12 fathoms under an easy sail, keeping 2 leads going, hauling off and on by the depths obtained; and to round the sand pretty close, or a ship will not be able, when blowing strong, to fetch into smooth water in the road. When round the sand head, sail must be quickly reduced, as the depth decreases rapidly in running into the road. The best time to go in, is in the morning before 10 A. M., previous to the mid-day wind setting in strong. In steering out from this anchorage, a ship must not bring the Great Mosque to the eastward of E. S. E. until she has deepened to 14 or 15 fathoms. Anchorage.

There is room for a few ships to moor conveniently, in a swatch to the southward of the sand heads, where they may ride in smooth water, when the strong northerly winds prevail, in June, July, &c. H. M. ships Leopard, Centurion, and Orestes, rode safely in this birth in 5 fathoms, with the south fort bearing E. by S. ½ S. the north fort E. N. E. ½ N., and the Great Mosque E. ½ N., 2½ miles off shore. From this birth, the boats passed between the ships and the town with a leading wind, which was very convenient.

Captain McCluer, directs ships or vessels drawing under 15 feet water, bound to Mocha Road, to steer from the Straits N. by W. till the Date Grove bears east, then haul into 7 fathoms. Steer from hence N. and N. by E. till the southern fort and Great Mosque be in one, then haul in for the northern fort N. E. ½ N. or N. E. by N., and anchor with the Great Mosque east, in 3½ fathoms. This track carries a vessel over the inner part of the shoals in 3 and 3½ fathoms, but the depth on them, is less farther off shore. Directions for small vessels to sail into the road.

Mocha is a place of considerable trade, particularly in coffee, which is thought the best in the world. Sheep and other articles of refreshment may be procured, but the water is indifferent, being in general brackish. The 2 points that embrace the road, and on which the forts are situated, are about 1¼ mile asunder, bearing nearly N. N. E. and S. S. W. from each other. The road is safe to approach from the northward, there being no danger in that direction: all ships touching here, should moor. Description of Mocha.

* Ships should be cautious not to haul round the sand head till the Great Mosque is E. by S. ½ S. or E. S. E. The Success galley in rounding it had 13. fathoms, and the next cast only 3 fathoms hard sand. On the outer point of the sand head there is only 2½ fathoms, and a boats length farther out 4½ and 5 fathoms.

By the mean of many observations selected from the journals of several intelligent commanders employed on the expedition to the Red Sea, Mocha is in lat. 13° 20′ N., lon. 43° 20′ E. corresponding exactly with Sir Home Popham's observations, and with those made by Captain Charles Court, during his survey of the Red Sea. The variation in the Road in 1799, was 9° W.

Geo. site.

# *NAVIGATION OF THE RED SEA.*

## COASTS OF ABYSSINIA AND ARABIA, WITH SAILING DIRECTIONS.

Abyssinian Coast.

COAST OF ABYSSINIA, has generally been avoided by ships navigating in the Red Sea, and was very little known until the late survey of it by Captain Charles Court, made in 1804-5, from the straits of Bab-el-mandeb to Salaka, in lat. 20° 29′ N. which was executed in the Company's cruizers, Panther and Assaye, having Lord Valentia on board. Several parts of the coast form good harbours, with moderate depths for anchorage, and in other places it is dangerous to approach, on account of coral reefs in its vicinity.

Geo. site of Ras Rattah,

From Ras Firmah, the north point of Asab Bay, which is nearly opposite to Mocha, the coast of Abyssinia extends about N. W. to Ras Rattah, or Sister Hills, in lat. 14° 56′ N., lon. 40° 55′ E., having in this extent several curvatures, and projecting points, with soundings along it, generally soft ground, fit for anchorage. A chain of rocky islands stretch from the Arroe Islands, to the S. S. W., within 2½ leagues of Ras Beloul, which is the first point from Ras Firmah, and distant from it 5½ leagues.

Coast from hence to the northward.

Mails.

MAILS, are some Islands near a point of land, where there is a round mountain, and 3 or 4 miles N. N. W. from the Mails are some rocks above water, in lat. 14° 1′ N., distant 5 miles from the coast, having South Cadally Island to the westward of them. About 3½ leagues directly west from this Island lies the village Ayt, with a mount resembling a quoin near it. The anchorage off this village is in lat. 14° 00′ N., where vessels may lie in 9 or 10 fathoms sheltered from southerly winds. About 2 leagues to the northward of this place is North Cadally Island, having a reef of rocks extending from it to the shore, with soundings 17 or 18 fathoms close to the island and reef: from hence, the coast is safe, and without islands, till the Amphilah Islands are approached. These lie near the shore, to the S. E. of the Sister Hills, affording good shelter in 6 or 7 fathoms, within the largest or S. E. Island, with wells of fresh water, a little way inland on the main, and there is a harbour for small ships between the 2 Islands and shoals, about the middle of Amphilah Bay, where the Marian lay.

Ayt Village.

Gebel Morah Point.

GEBEL MORAH POINT, is distant about 5 leagues W. by N. from the Sister Hills; there is a dangerous shoal N. by E. from this Point, distant about 5 leagues, having several small Islands, called Miseras Islands, to the N. W. of it: there are no soundings near these, or the Shoal.

Hurtow S. E. Point, and Howakil Bay

HURTOW S. E. POINT, is 7 leagues to the N. W. of Gebel Morah; between them the coast forms Howakil Bay, filled with groups of Islands, and shoal water, in several places. But there is a good harbour, formed on the N. W. side of the largest Island Howakil, between it and the outermost Island, in lat. 15° 10′ N.

Near the Islands in the south part of the bay, vessels may anchor in 4 and 5 fathoms

water, and there are several places among the Islands and Shoals in this bay, where vessels of moderate size may find shelter from mostly all winds. Arena Village stands on the west side of the bay, where the country dows resort to, for purposes of trade.

HURTOW POINT, is about 5 leagues to the N. W. of the S. E. point of the same name, having a channel about 2 leagues broad, between it and the large Island Dhalac to the northward. Hurtow Point,

There are several Islands in this channel, with deep water near them and the south end of Dhalac; and between them and Hurtow Point, vessels may pass in moderate depths for anchorage. About 3 miles off shore, nearly mid-way between Hurtow Point and the S. E. Point, there is a rocky bank with 2 fathoms on it, having an Island about 4 miles from it to the S. Eastward, and nearly the same distance from the shore. Outside the Island (called Pilot's Island) and the rocky bank, the depths are 18 and 20 fathoms; and between them and the main, from 10 to 14 fathoms. Channel between it and Dhalac Island.

ANNESLEY BAY, formed by the land of Hurtow to the eastward, and the high land of Gedam to the westward, is about 3½ leagues wide, and nearly the same in depth, having a large Island, called Valentia Island, at the entrance. The eastern channel into this bay, has moderate depths for anchorage along the east side of Valentia Island; an extensive reef projects from the Hurtow shore, to 2 Islands which bound the channel on the east side; and nearly in mid-channel between the southernmost of these Islands, and the S. E. part of Valentia Island, there is a rocky islet, called Centre-Bay Rock. The channel to the westward of Valentia Island, is wide, with deep water, 30 and 40 fathoms. The land of Hurtow has a peak on it, opposite to Pilot's Island. Annesley Bay.

DHALAC ISLAND, is about 7 leagues in extent N. N. W. and S. S. E., the south end being situated in lat. 15° 32½′ N., lon. 40° 15′ E. Groups of small islands almost surround it, particularly off the N. E. and N. W. parts, they extend far out from the main Island. About 4 miles off its western shore there is a dry sand bank, in lat. 15° 38′ N. and 2 leagues farther to the N. W. a rocky bank, with 2 fathoms, distant 4 miles to the westward of a group of Islands contiguous to Dhalac. On the south side of the southernmost Island of this group, a vessel may anchor in 12 fathoms water. Geo. site of Dhalac Island. Isles in its vicinity.

MASSOWA BAY, in lat. 15° 34′ N. lon. 39° 37′ E. is on the north side of the high land of Gedam, having a town called Arkeko in the southern part of it, where vessels may anchor in 8 or 10 fathoms, within the S. E. Isle and its adjoining shoals, and be sheltered from all winds. The north part of the bay contains 3 Islands environed with rocks, having a passage between the northernmost Island and north point of the bay, into port Massowa, where there is shelter from all winds in 5, 6, or 7 fathoms water, inside the Island Massowa, where the town is situated. Geo. site of Massowa Bay.

A vessel bound to Port Massowa from the southward, after rounding Hurtow Point, should steer to pass to the northward of Valentia Sand, which projects from the north point of that Island about 4 or 5 miles, nearly due north; and in order to avoid a very dangerous rocky knoll, which is detached from the extremity of the sand at least 3 miles to the N. Westward, she ought not to haul to the westward until certain of being past it to the northward. It lies nearly due west from the dry sand bank off Dhalac Island, distant 3 leagues. The soundings are no guide, there being no ground at 45 fathoms close to its eastern verge, and the next cast upon it, 20 fathoms rocks. Betwixt it and the dry sand bank, there are no soundings with 60 fathoms of line. How to sail toward it from the southward.

HARRARAT ISLAND, bears N. by W. from the north point of Massowa Bay, distant about 7 leagues, the south point of it being in lat. 16° 00′ N. Two islets lie close to Harrarat and other Islands.

its northern extremity, others 2 and 3 leagues to the eastward, and the Island Dohul about 3 leagues to the S. E. of its south end. Several Islands lie to the N. Westward of Dohul, and a reef extends from it to the Islands on the west side. Off the N. E. part of it there is a shoal. The channel, between these Islands and the main, is about 3 leagues wide, with various depths in it, from 12 to 40 fathoms.

Coast from Mirza Mumbarack to Ras Ahveed.

MIRZA MUMBARACK, in lat. 16° 30′ N. is about 10 leagues N. N. W. from the north end of Harrarat Island; along this part of the coast, there are moderate depths, frequently soft ground; and between Mirza Mumbarack, and the 2 Islands about 3 leagues off shore opposite to it, there are regular soundings, 36 fathoms near the Islands, decreasing to 6 and 7 fathoms near the shore.

From Mirza Mumbarack to Ras Ahveed, in lat. 18° 12′ N. the direction of the coast is about N. N. W.; there are no Islands in this space; the soundings are soft in some places, but in others hard and irregular. A bank extends 5 leagues from the shore, in lat. 17° N. with alarming over-falls on it, from 18 to 40 fathoms hard ground; and another bank of foul ground, extends along the coast, from lat. 17° 20′ to 17° 50′ N., with irregular soundings on it from 10 to 40 fathoms.

Suffeenot Rossool Reef.

There is also a dangerous reef in lat. 18° 21′ N., lon. 38° 58′ E. to the eastward of the channel leading to Port Mornington, on which the ship Suffeenot Rossool struck in 1814. It is about 300 or 400 feet in extent north and south, and apparently greater from east to west, having very irregular soundings on it from 2 to 5 fathoms, and no bottom within ½ cable's length of it, with 60 fathoms of line. From the southernmost of the range of Islands that lie to the N. Eastward of Port Mornington, it bears E. S. E., a few miles distance, and from the easternmost of these Islands, it bears S. by E. by compass.

Geo. site of Port Mornington.

PORT MORNINGTON, in lat. 18° 16′ N., lon. 38° 32′ E. (the entrance) is a safe harbour, formed by a chain of Islands stretching across the entrance of the bay. Ras Ahveed is the eastern point of this bay or harbour, between which and the Islands, there is no passage except for dows.

The proper channel is directly north from Ras Ishtye, the N. W. point of the harbour, between the 2 northernmost Islands. The narrow part of the channel between the point and the Islands is a large ½ mile wide, with soundings in it 6 and 5 fathoms, decreasing to 4½ or 5 fathoms opposite the town of Badour, which is situated at the west end of the large Island in the middle of the bay, about 5 or 6 miles from the entrance. The depths in the harbour are generally from 4 to 5 fathoms coral and sand, between the west part of the Island and the main. About 3 leagues to the N. N. E. of the entrance of Port Mornington, there is a winding shoal, extending nearly east and west 4 or 5 miles, having 2 islets on its western part, called Lightning Islands. The Shoal is called Four Anchor's Shoal, and near it, on the north side there is anchorage, but no soundings at 3 or 4 miles distance. To the northward of Port Mornington, a chain of Islands* extends along the coast, some of them are 10 or 11 leagues off shore. The largest of these is Direction Island, about 10 leagues to the N. W. of Port Mornington. It is called also Tella Tellah, and is 4½ leagues from the coast; the depths are generally from 10 to 16 fathoms in the channel between it and the main, and from it along the coast to the entrance of Port Mornington, they are nearly the same.

Four Anchors Shoal, and Islands off the coast.

Botherem Bay.

BOTHEREM BAY, is about 19 leagues from Port Mornington, the direction of the coast between them about W. N. W. ⅔ N., with some projecting points and curvatures.

* The outermost of these are low sandy islands, and should not be approached in the night.

This bay is environed with Islands and shoals, having good anchorage inside of them in 7, 8, and 10 fathoms, but the navigation is intricate, on account of the numerous shoals.

The entrance into it is from the eastward, in lat. 18° 42′ N., between the rocky shoals and banks to the northward, and the islets and banks extending from the main to the southward.

The soundings in the channel are 7, 8, and 9 fathoms, and the courses through, from W. to W. N. W.; but this place is only fit for small vessels, on account of the passage being contracted by the shoals and islets.

Geo. site of Salaka, and the coast between it and the former bay.

From Botherem Bay to Salaka, in lat. 20° 28′ N. lon. 37° 27′ E. the direction of the coast is N. ¼ W. and N., having some curvatures and projecting points; throughout this space, a reef extends parallel to the land, and distant about 2 leagues from it in many places. Betwixt this extensive reef and the coast there is a narrow channel, having in some parts 16 fathoms mud, and in others 40 fathoms no ground. The coast is also lined with a rocky shore.

Geo. site of Suakin.

SUAKIN, in lat. 19° 5′ N. lon. 37° 33′ E., is a small port where there is a town. The entrance is formed by a narrow channel through the reef, not more than ⅛ of a mile broad, with soundings in it from 20 to 9 fathoms mud. Opposite to this place, is the southern part of the outer reef, that extends along the coast to the northward, and it is here, about 2 leagues from the shore.

Mirza Sheik Baroud, and other places.

MIRZA SHEIK BAROUD, in lat. 19° 35′ N. bearing about N. or N. ¼ W. from Suakin, is a small port, having 12 and 14 fathoms water in it, and the same depths in the channel that leads to it through the reef, which is about ⅛ of a mile broad. Mirza Durhoor is a small port for boats, about 5 leagues to the northward of the former port. The variation here in 1805, was 12° 23′ W. In lat. 20° 0′ N. there is a small bay, called Mirza Arosse, and Mirza Fadger; and 4 leagues farther northward, two small indentations called Mirza Howee Teeree, and Mirza Arakea. A little to the southward of this place, there is a hill like a barn near the sea; and to the northward Salaka Hills, of an undulating shape, situated a little farther inland. Along the whole of the coast from Suakin to Salaka, there is thought to be no passage through the outer reef, it being one continued chain of rocks.

Geo. site of Cape Calmez.

CAPE CALMEZ, in lat. 21° 28′ N., lon. about 37° 25′ E., bears nearly N.* from Salaka, the land forming a deep bay to the southward of the cape, which is very imperfectly known. There are several islands in this bay, and about 8 leagues to the N. N. Eastward of Salaka, a low sand, having islands to the westward between it and the main land.

## *COAST OF ARABIA.*

Geo. site of Cape Israel.

FROM MOCHA, THE COAST OF ARABIA, extends about N. by E. 6 leagues, to 3 hills, called the Sister Hills; and from hence to Cape Israel in lat. 15° 15′ N., lon. 42° 41′ E., its general direction is about N. N. W. The only danger in this space is a shoal with 2 fathoms on it, distant from the shore 4 or 5 miles, and opposite to Ras Magamel,

Coast of Arabia near it.

* The bearings, or direction of the coasts of the Red Sea, and other coasts described in this work, are the *true* bearings by the *world*, and not by compass, except when otherwise expressed.

in lat. 14° 35′ N. On the north side of this point of low land, is the Bay Dennis, which according to the French plan is a safe harbour, having regular soundings from 4 to 6 fathoms, with a watering place on the coast opposite. About 4 leagues to the northward of Ras Magamel is the town of Hodeida, where ships may anchor in soft ground. Cape Israel projects greatly, having the small island Raschab about 4 miles distant from it to the S. W., with 13 fathoms water between it and the cape. On the north side of this cape there is a deep circular bay, protected from the sea by the large island Camaran, and a group of islands to the N. W., between which, and the former island, there is a safe channel, with soundings from 20 to 12 fathoms. There is also a channel between Cape Israel and the Island Camaran, having 9 and 10 fathoms in it. Inside the island, ships may lie sheltered mostly from all winds. A coral reef and bank projects to the westward nearly 3 leagues from the west end of Camaran, which must be avoided; this reef is in lat. 15° 21′ N.

Islands near the coast.

Geo. site of Loheia.

LOHEIA, is a considerable town, situated in lat. 15° 44′ N. lon. 42° 44′ E., at the northern extremity of the deep bay mentioned above.

From Loheia the coast of Arabia extends generally about N. N. W. to nearly the lat. 21° N. fronted by many islands and shoals, several of which are very little known. The Dows in navigating between Mocha and Juddah, pass inside of the groups of islands and shoals, but this track is unknown to Europeans, and unsafe for large vessels.

Ghesan and the adjacent coast.

GHESAN, is a town in lat. about 16° 50′ N., and 6 leagues to the N. W. of it, the projecting point Ras Ghesan is situated. From Loheia to Ghesan, the channel within the islands has from 8 to 12 fathoms in it, in most places. Some of the islands or shoals in this space, are distant 8 or 9 leagues from the main, and have generally coral soundings near them.

Attui and other places.

ATTUI, is a town about 14 leagues to the northward of Ras Ghesan, where there is anchorage; about 6 leagues farther to the N. W. in lat. 17° 55′ N. is the island Kotumbul, with anchorage between it and the shore, and 6 leagues more to the northward lies the harbour of Mirza Nhud. The anchorage of Emir and Hali, is 6 or 7 leagues to the northward of the latter place.

Geo. site of Camfidia, Arabian Coast from it to Juddah.

CAMFIDIA, in lat. 19° 7′ N., lon. about 40° 50′ E., is a considerable town, and there is said to be good water at a place 10 leagues to the northward, called Bender Dodja. From hence to Cape Ibrahim, in lat. 20° 20′ N. the coast is high land. About 6 leagues northward from this cape, the Road of Goofs is situated. Ras-el-alm point, the southern extreme of Juddah Bay, is about 18 leagues to the northward of Goofs, having several small towns between them, little known to Europeans. The islands and shoals which front the Arabian coast between Ghesan and Juddah, extend in several places to the distance of 9 or 10 leagues from the shore; and those in lat. 18° N., and from 18½° N. to 20½° N., stretch out 14 and 15 leagues from the land.

Trade has declined.

Several of these places on the Arabian side of the Red Sea, were formerly frequented by ships which traded from Surat and other parts of India; they were also, sometimes visited by European ships, but from the restless and predatory disposition of the inhabitants of the coasts bordering on the Red Sea, and those in its proximity, the trade here, and also that of the Persian Gulf, has now greatly declined.

# *DIRECTIONS for SAILING from MOCHA to JUDDAH;*

## DESCRIPTION OF DANGERS NEAR THE PASSAGE.

FROM MOCHA ROAD, the islands called the Arroes bear nearly N. W. (true bearing) distant 11 leagues. GREAT ARROE is in lat. 13° 41′ N., nearly midway between the Arabian and Abyssinian coasts; it is high, with a group of small islands around, and a chain of rocky islets stretching from it toward the Abyssinian shore, with passages between some of them. Arroe Islands.

GEBEL ZEGHIR, in lat. 14° 2′ N. lon. 42° 52′ E. or 28 miles west of Mocha by chronometer, bears N. W. by N. from Mocha Road, distant 16 leagues, and 5 leagues directly North from the Great Arroe, having several islets near it, and between it and the Arroes. This island is high, and distant from the Arabian coast about 6 leagues. The 3 small islands situated near its northern side, are moderately high, and are in one with each other bearing W. by N. Geo. site of Gebel Zeghir.

There is a small bay or cove, with fresh water, on the west side of Gebel Zeghir, where a vessel might anchor; in other parts, it is said to be steep to. This Island is uninhabited, the Arabs considering it to be the residence of departed spirits: should a ship touch at any part of the Red Sea not frequented by Europeans, with the view of obtaining water or refreshments, great caution ought to be adopted, to guard against treachery from the various predatory tribes inhabiting the borders of this sea.

Ships bound up the Red Sea from Mocha, may steer along the Arabian coast, in from 18 or 20, to 15 fathoms, and pass Gebel Zeghir at any convenient distance to the eastward; but these islands being steep to, it is prudent to borrow on the bank near the coast, where the depths are moderate and fit for anchorage, should the winds be light, or the currents adverse. To sail from Mocha to the northward.

GEBEL ZEBAYR, the largest of the Sabugar Islands, is in lat. 15° 3′ N., lon. 42° 18′ E., and bears about N. N. W. ½ W. from Gebel Zeghir, distant 26 leagues. In steering between them, the Arabian shore may be approached within 4 or 5 miles, except opposite to Ras Magamel, the 2 fathoms shoal (already mentioned) must be avoided, which is about 10 leagues N. by E. from Gebel Zeghir, having 17 fathoms water close to it. The Sabugar Islands are in general high, and extend from lat. 14° 58′ N. to 15° 10′ N. There is a Haycock Rock, which bears from the N. Westernmost Sabugar Island W. N. W. 4½ miles, and nearly the same distance from the northernmost island. Care is requisite in passing near these islands in the night, as the Haycock Rock is not placed in the old charts, and no ground with 40 fathoms line to be had within 4 miles of them, so that a ship cannot anchor should it fall calm, and the current be setting to the S. W. or southward, which frequently happens. These islands are rocky and barren, the largest has a conical hill near its south end, and another not so high near the centre. Geo. site of Gebel Zebayr; Description of it and the Sabugar Islands; Directions.

The channel between the Sabugar Islands, and those called the Camaran Islands, contiguous to Cape Israel, is about 7 leagues wide; and in passing through, the reef extending from the west end of the Great Camaran Island, must be avoided, which has been already mentioned in the brief description of the Arabian Coast. At the distance of 3 miles to the Eastward of Gebel Zebayr, the S. Easternmost and largest of the Sabugar Islands, there is a Dangerous Rock, nearly even with the water's edge, which must also be avoided, having deep water near it, and the Sabugar Islands, from 50 to 70 fathoms. A ship should keep To sail through the channel. A Rock near Gebel Zeghir.

nearest the east side of the channel, in passing through, that she may anchor on the bank if requisite. The islands off Cape Israel, are low and barren.

Geo. site of Gebel Tor.

GEBEL TOR, in lat. 15° 32′ N. lon. 42° 00′ E., or 1° 20′ W. from Mocha, by chro. bears N. W. by N., from Gebel Zebayr, 12 or 13 leagues. This island is of considerable height, having a volcanic peak; it should not be approached close in light winds, being steep to, without proper anchorage. To the westward of it, at 8 and 9 leagues distance, there are Coral Banks with great overfalls; on one of these, bearing W. by N., 8 leagues from Gebel Tor, a French ship grounded in 1751, and was nearly lost. The channel generally used, is between it and the islands on the Arabian coast, having irregular soundings in it; deep water toward Gebel Tor, and shoal coral soundings, on the edges of the banks adjacent to the coast, and near the Aschafas. Islands which lie off it. The variation near Gebel Tor in 1801, was 8° 30′ W.

Banks to the west of it.

Proper channel.

Instructions for sailing from Gebel Tor to the northward.

Ships bound up the Red Sea, generally take a departure from Gebel Tor, and afterward steer up the middle of the sea, endeavouring to keep clear of either coast, particularly the Arabian side, on account of the numerous shoals extending along that side of the channel. When the winds are unfavorable, it may be frequently prudent to see the land or some of the shoals or islands on either side before dark, that the navigator may be certain of his situation, and be enabled to work well out in the offing during the night; for in general, there are no soundings to warn him on approaching the shoals, most of which are dangerous and steep to. It may therefore be useful, to give a description of the shoals or islands whose situations have been recently ascertained, and thought to be the most dangerous.

Banks off the Abyssinian coast.

From the shoal situated 8 leagues to the westward of Gebel-Tor, a Bank, or ***Banks***, of coral, extend to the N. W. opposite to the islands on the Abyssinian coast, nearly to lat. 16° 40′ N. The edges of these banks are about half-way between the Abyssinian coast and the islands on the Arabian side, having very irregular soundings on them, and thought in some places to be dangerous. Should a ship get soundings on them in standing to the S. Westward in the night, she ought immediately to tack to the eastward.

DOOHARAB, a small low island in lat. 16° 15′ N. lon. 1° 12′ W. from Mocha by chro. has a white sandy beach, and is covered with trees. When it bore N. N. E. 4 leagues the Rockingham tacked in 13 fathoms coral, and just before tacking had 20 fathoms. Near this island there are several banks. In lat. 17° 0′ N. and 1° 54′ W. from Mocha, there is an island on the Arabian side; when it was in sight to the N. E., the same ship had ground 47 fathoms. In lat. about 17° 40′ N. on the same coast, are several islands at a great distance from the shore, with shoals near them.

Islands and shoals near the Arabian coast.

In lat. 17° 36′ N. and 2° 16′ West of Mocha by chronometers, there are 2 sandy Islands, with a coral bank of 4 fathoms to the S. W. of them, seen by the Ternate in 1811.

In lat. 17° 58′ N. to 18° 4′ N. and 2° 25′ W. from Mocha, by chronometers, there are 2 low Sandy Islands, with a reef of breakers extending from them to the southward. When they bore from N. by E. ½ E. to N. E. 7 or 8 miles, the Rockingham had ground 36 fathoms.

In lat. 17° 52′ N. lon. 40° 20′ E. the Clarance schooner discovered a shoal, but it is possible her reckoning might have been incorrect, and if so, it may be the danger just described, that she saw.

In lat. 18° 46′ N. and 1° 24′ W. from Gebel-Tor by chronometer, there is a low Island with breakers surrounding it, and stretching a considerable way to the north-eastward. Variation off this island 9° W. in 1801.

MARABIA REEFS, commence a little to the northward of the danger last mentioned; the southern extremity is thought to be in lat. 18° 53′ N. and they are very extensive and

dangerous: several parts of them were seen in the Rockingham, June 4th, 1801. Breakers seen at 6 P. M. in lat. 19° 0′ N. and 1° 32½′ W. from Gebel-Tor, by chronometers. Breakers at 11 A. M. in lat. 19° 15′ N. and 1° 26½′ W. from Gebel-Tor. A shoal seen at the same time, in lat. 19° 12′ N. and 1° 35½′ W. from Gebel-Tor; and a low sandy isle in 19° 24′ N. and 1° 31½′ W. from Gebel-Tor by chronometers. The shoal was the most westerly danger seen, and by observation ☉ ☽ it is in longitude 40° 24′ E. She tacked about 3 miles from it, and had no ground at 55 fathoms. Observations by ☉ ☽ taken in H. M. S. Leopard, made the western part of these shoals in lat. 19° 11′ N. lon. 40° 5′ E., or 19 miles farther west than the Rockingham's position. Geo. site of Marabia Reefs.

There is in lat. 18° 57′ N. about 11 leagues west from Marabia Reefs, a small shoal placed in some charts, but its existence seems very doubtful. Doubtful shoal.

SISTERS, are islands that may be seen 5 or 6 leagues, situated near the outer edges of extensive reefs which lie to the northward of the Marabia shoals: the most westerly of the Sister Islands and Reefs, are between lat. 19° 30′ N. and lat. 20° 0′ N. and lon. 40° 0′ W. by observations taken in the Rockingham. By observations taken in the Cuvera, they extend 6 leagues farther west. Geo. site of the Sisters Islands and Reefs.

Opposite to the Sisters and Marabia shoals, a chain of low sandy islands extends 10 or 11 leagues from the coast of Abyssinia, which projects considerably in this part. Between the low sandy islands off this coast, and the Sisters and Marabia shoals off the Arabian side, the channel is about 25 leagues wide. Low sandy islands off the Abyssinian coast.

A doubtful shoal, is placed by some navigators in lat. 18° 46′ N. and 2° 35′ W. from Gebel Tor, adjacent to the low sandy islands on the Abyssinian coast. Doubtful shoal.

In lat. 19° 50′ N. lon. 38° 26′ E. the Rockingham passed a reef of breakers. The Antelope, Bombay cruizer, saw a reef nearly in the same latitude, but places it more to the westward. Reef of breakers off the Abyssinian coast.

ROCKINGHAM SHOAL, where she struck at 8 P. M. on the 8th June 1801, and received great damage, is about 11 leagues from the Arabian shore, having other shoals between it and the coast, and more dangers to the northward. The south part of the shoal is in lat. 20° 16′ N. and lon. 39° 39′ E. or 2° 21′ West from Gebel-Tor by chronometers*. Geo site of the Rockingham Shoal.

In lat. about 20° 26′ N., to the north-westward of the shoal just mentioned, the Cuvera saw 6 islands, having shoals near them. Other shoals and islands near it.

SOFIA SHOALS, to the N. W. of the Islands last mentioned, are 7 or 8 leagues distant from the Arabian coast. They extend from lat. 20° 42′ N. to lat. 20° 50′ N. and are in lon. about 39° 20′ E. Geo. site of Sofia Shoals.

SARUM SHOALS, and others, nearly join the former, and extend from lat. 21° N. to the shoals off Juddah Harbour, being 6 and 8 leagues distant from the coast in some places. Ships bound to Juddah, should be careful not to approach these shoals, particularly in the night, as their outer edges are steep to. When a ship is close to some of these shoals, the land may be discerned in clear weather, but it is prudent to keep to the westward at a reasonable distance from them, until in the lat. of Juddah, and then steer directly to the eastward for that port. Sarum Shoals.

In a run of 8 days from Mocha, the ships Kaikissroo and Lowajee in company, made the shoals to the southward of Juddah in lat. 21° 7′ N. to be situated 4° 6′ W. from Mocha by their chronometers, differing from each other only 2 miles. Capt. T. Kydd of the Lowajee,

* The coast of Arabia about Cape Ibrahim, opposite to the Rockingham Shoal, by that ship's observations seems to be about 1° 50′ West from Gebel-Tor.

advises to keep 10 or 12 leagues from the land in passing these shoals, or not to come under 4° 15′ or 4° 20′ W. from Mocha by chronometer, until in lat. 21° 20′ N., and then steer to the eastward for the town of Juddah. If the wind is southerly, care must be taken not to get to the northward of lat. 21° 35′ N., as the shoals to the N. W. of Juddah are very dangerous, and distant 9 or 10 leagues from the land. The shoals that are farthest from the land to the S. Westward of Juddah, are called MARMARY SHOALS, and seem to be part of the Sarum Shoals.

General remark to be observed, in sailing up the Red Sea toward Juddah.

In sailing up the Red Sea toward Juddah, the Abyssinian coast is much safer to approach than the Arabian side, but the chain of low sandy islands between 18° 25′ and 19° north lat., adjacent to the former coast, should be avoided. With a fair wind, the safest track is about mid-channel, which ought to be preferred to that on either coast, particularly in a large ship. A course by compass steered N. N. W. correctly from Gebel Tor, as the current generally sets westerly, will carry a ship directly up the middle of the Red Sea, and when abreast of Juddah, the mountains on the Abyssinian coast will be discernible. If the wind shift suddenly from north to south, it generally brings a strong northerly current, for which allowance ought to be made.

In lat. 21° 12′ N. and 1° 56′ W. from Juddah, a shoal is situated about 6 or 7 leagues from the Abyssinian coast, which was seen by Captain Kydd in the Lowajee. It appeared to be 3 or 4 miles in length, and rocks were seen in several places above water.

Doubtful Shoal.

Nearly opposite to Juddah, between it and Cape Calmez there is a doubtful shoal, variously placed by navigators. One position assigned to it, is lat. 21° 34′ N. lon. 38° 11′ E. about mid-channel between the Abyssinian coast and the shoals off Juddah Harbour. It may probably be the same shoal that is said to lie in lat. 21° 50′ N. lon. 38° 47′ E., although this rather seems to be one of the outermost of the group of shoals extending from Juddah to the N. Westward, on which the ship Eliza was lost. In lat. 21° 43′ N. about 5 leagues distant from the Abyssinian coast, and not far to the northward of Cape Calmez, there is a dangerous reef about ½ a mile in length, on which the sea breaks.

Reefs off the Abyssinian Coast.

In lat. 21° 53′ N. and in lat. 22° 1′ N. there are 2 reefs of breakers, which lie several leagues from the coast of Abyssinia, about 3 to 5 leagues off shore, and bear from each other about N. E. by N. and S. W. by S. distant 3 leagues: on the land directly west from these dangers, a peaked hill is situated.

Geo. site of Juddah.

JUDDAH TOWN, by mean of many observations taken in different ships employed on the expedition to the Red Sea, in 1800-1, is situated in lat. 21° 29′ N. lon. 39° 15′ E. It is a port of considerable trade, arising from the multitude of pilgrims which come from various Mahometan countries, to visit Mahomed's Tomb at Mecca, distant about 21 miles inland.

Description of the land,

When a ship approaches Juddah, the southernmost and highest hills seen, is a range above the town, which extends to the southward; also to the northward of it, the land is high and hilly: the land about Juddah may be seen 10 or 11 leagues.

and the shoals off the harbour.

It would be very imprudent for a stranger to sail through between the shoals into Juddah Road without a pilot:—If signals are made with 2 guns, the native pilots will meet a ship well outside. In running in, or out of the Road, they are guided by the eye, as there are no cross bearings or proper marks to lead them clear of the numerous sunken rocks about the shoals, which in hazy weather, or when the sun is obscured, cannot be discerned till a ship is nearly upon them. The best time to go in, is between 10 A. M. and 4 P. M. as then a green shade is reflected by the sun on all the sunken rocks, which are very steep to. The principal shoals may be discerned at a considerable distance, as the surf runs high on them with the sea breeze.

Sailing directions.

When a ship is in the lat. of Juddah, she ought to steer in for the shoals, keeping a good look out for them, from the fore or fore-topsail yard, and keeping the town E. by N. by compass, as soon as it is discerned. A green shade will soon be perceived on a coral shoal,

which is about ¼ of a mile in length, called the FOURTEEN FEET SHOAL; but has only 10 feet on it in many places. It extends nearly N. W. and S. E. and bears W. by S. ½ S. from the north end of the Colone Shoals, distant 2 miles. This shoal is nearly 3 leagues off shore, and may be passed on either side, but as shoal water stretches out from its northern extremity, it is best to pass close round the south end of it, and steer about N. E. by E. for the COLONE SHOALS, which break very high with the sea breeze. Having passed close to the north end of these, another range of shoals will be seen to the N. E., the southernmost of which is called the OUTER GATE; the passage is close to this shoal, as there are 2 sunken rocks to the southward of it at no more than 150 yards distance. From this place, what is called the INNER GATE, is visible a-head; being formed by 2 shoals, not more than 100 yards asunder, which at first appears to present no entrance.

When through the inner gate, a ship should luff sharp round the next or HARBOUR SHOAL, and anchor in any depth thought proper, with the town from E. ½ S. to E. S. E. distant 3 miles; about 12 fathoms is a proper depth to chuse for that purpose. Anchorage.

In standing from the Colone Shoals through the gateways, the depths are generally 17 and 18 fathoms, but a ship ought not to anchor in the passage except in a case of necessity. To the southward of the outer gate there are many sunken rocks, having only 1½ and 2 fathoms water on them; H. M. frigate La Forte struck, and was lost, on one of these rocks close to the outer gate. Channels and shoals.

The passage described above, is the only safe one for a large ship, but there are many between the shoals, frequented by small vessels.

THE COLONE SHOALS, are 5 or 6 in number, extending chiefly about S. W. by S.; a ship may pass between these, instead of tacking, if the wind will not permit her to pass the north end of them; but she ought to keep close to their edges in doing so, to avoid the sunken rocks which lie scattered about in this place.

The southern Island on with the Colone Shoals bears S. 9° E.; and when about ¼ of a mile from them, Juddah Town was on with the Sugar Loaf E. by N. and the Date Trees N. 10° E. by compass, the Gateway E. S. E.

An intelligent navigator, gives the following directions for entering among the shoals leading to Juddah Harbour. To pass to the southward of the Fourteen Feet Shoal, bring the highest Mosque* of the town E. 7° N. on with a rising part of the land, just half-way between a high round hill, and a conical one a little nearer the sea, the 5 date trees will then be visible from the deck N. by E. ¾ E. to N. N. E.; steer from hence N. E. by E. for the head of the Colone Shoals. If a ship is so much to the southward, as to bring the Mosque on with the first part of the rise of the conical hill, she will be close to a 2 fathoms shoal, which lies 2 miles to the S. E. of the former. Abreast of it, within a ¼ of a mile, the Mosque and Cone were in one E. ¾ N., the date trees just visible from the deck. Marks for passing the Fourteen Feet Shoal.

The proper time to sail from Juddah Road or Harbour, is early in the morning, while the land wind remains, which generally will carry a ship through the Gateways, and to the northward of the Colone Shoals. When past these, she ought to bear away W. by S. or W. S. W. 2 miles, to avoid the Fourteen Feet Shoal, before she haul to the northward, as it cannot be easily discerned until the sun is high. When to sail from Juddah Road; and how to steer to avoid the outer shoals.

When bound to the southward, and having passed the Fourteen Feet Shoal, a ship may steer S. W. then S. S. W., till past the Marmary Shoals, which are the outermost on the south side of the channel, and distant about 2½ leagues to the S. S. W. of the former shoal.

At Juddah, ships get supplied with sheep, vegetables, and fruits. Bullocks may sometimes be obtained. Refreshments, &c.

* This Mosque may be seen at 5 leagues distance.

Exclusive of the foreign trade with India and other places, there is a considerable trade carried on between Juddah and other parts of the Red Sea, particularly with Koseir, Tor, and Suez. Many vessels carry cargoes of coffee and other articles to the two ports last mentioned, which are carried across the desert on camels for the Turkish markets; for which they receive piece goods, and other European manufactures, in return.

## *DIRECTIONS for Sailing from JUDDAH to KOSEIR:*

### ISLANDS AND DANGERS IN THE PASSAGE.

Shoals to the northward of Juddah;

THE SHOALS in the vicinity of JUDDAH HARBOUR, extend to lat. 22° 10′ N.; projecting in many places 10 leagues from the main-land: the channel inside of these shoals is frequented by the country vessels, where they anchor in the night. H. M. sloop Babelmandel, passed inside of 27 of them, and had smooth water, her distance then 8 or 9 leagues from the coast, with several shoals between the ship and the shore. The western-most group of shoals to the northward of Juddah Harbour, or Eliza Shoals, on which the ship of this name was lost, lies between lat. 21° 40′ and 21° 50′ N., and 25 miles west from Juddah. The coast to the northward and abreast of the Eliza Shoals is very low, which makes them dangerous to approach, as the land is not visible.

and from hence along the Arabian Coast to the Gulf of Akaba.

Between lat. 23° N. and 24° N. several dangerous shoals are situated at 10 or 12 leagues distance from the Arabian Coast, and detached groups of shoals and some islands,* extend along the whole of this coast to the entrance of the Gulf of Akaba, in lat. 28° N. In some places the shoals are 5 or 6 leagues off shore, or rather farther, particularly from 25° to 26° N. lat., where several groups of islands and shoals are situated.

Ras Sellah Shoals.

RAS SELLAH SHOALS, situated between lat. 27° 20′ and 27° 40′ N., on which some ships were said to have been lost, project several leagues from the Arabian Coast.

The following shoals were seen in the Lowajee, in passing from Juddah towards the sea of Suez.

One in lat. 23° 43′ N. lon. 1° 3′ W. from Juddah, by chronometer. One in lat. 23° 50′ N. and 1° 10′ W. from Juddah. Another in lat. 24° 56′ N. and 1° 58′ W. from Juddah. And a shoal bearing from Hazeni Island (or Hassane Island) S. W. ½ W. distant 6 miles. Aurora Shoal, in lat. 25° 22′ N. and 2° 15′ W. from Juddah, extends N. N. W. and S. S. E. about 3 miles, and is 12 or 14 leagues distant from the shore.

From lat. 27° 5′ N. to 27° 25′ N. the Lowajee passed within 5 or 6 miles of the Arabian Coast, and saw no danger except a few small reefs close in shore; although in that space, the old charts represent the coast to be very dangerous.

Geo. site of Yambo.

YAMBO, in lat. 24° 10′ N. lon. 38° 21′ E. is a considerable town, with a harbour formed between 2 reefs, but it is very contracted. The land over it is high and rugged.

Geo. site of Bareedy Harbour.

BAREEDY HARBOUR, in lat. 24° 17′ N. lon. 37° 45′ E., about 13 leagues to the westward of Yambo, is formed by several shoals, with deep water within them, from 20 to

* Of these Islands on the Arabian side, Hazeni is in lat. 24° 59′ N., Namier in 25° 26′ N., and Abu Melle in lat. 25° 40′ N. Those called Naaman Islands are very low; their southern extremity is in lat. 25° 40′ N. and 2° 34′ W. from Juddah. They lie in a direction parallel to the coast, and extend to lat. 26° 15′ N.

30 fathoms, where H. M. S. Swallow anchored in 1776. The land to the eastward of Bareedy is low near the sea, but to the northward of it, there are several hills; and farther inland, high table land, joining to a ridge of elevated hills.

CAPE BARRY, in lat. 26° 34′ N. is high land, and there are several hills near the coast, in lat. 27° 30′ N. to the northward of Ras Sellah. Cape Barry.

When a ship is outside the shoals off Juddah Harbour, and bound up the Red Sea to Koseir or Suez, a course made good about N. W. will carry her directly up the middle of the sea, toward Koseir, but great care is requisite to avoid several shoals, whose situations are not perfectly ascertained, some of which lie nearly in mid-channel. How to proceed from Juddah to the northward.

Several shoals are situated on the Egyptian side between Ras-el-Gedid and Ras-el-Ans, particularly to the southward of the latter, in the extensive bay called Foul Bay. Shoals near the Egyptian Coast.

RAS-EL-GEDID, on the ABYSSINIAN COAST, is in lat. about 22° 20′ N. distant 18 or 19 leagues to the N. N. W. of Cape Calmez. Several shoals extend along the coast between them, inside of which, there is a passage for small vessels; the land to the southward of Ras-el-Gedid is high, and may be seen 9 or 10 leagues. From this place, the coast extends about W. N. W. 35 leagues to the bottom of Foul Bay, and then assumes a N. Easterly direction to Ras-el-Ans; but the whole of this part of the coast is imperfectly known, being generally avoided by Europeans. At the bottom of Foul Bay, in lat. 23° 20′ N. the Port of Habesh or Abyssinia is situated, said to afford shelter for ships, and fronted by shoals on the north side of the entrance. Ras-el-Gedid. Port of Habesh.

In lat. 22° 26′ N. and 2° 40′ W. from Juddah, about 12 leagues from the shore, there lies a shoal 4 or 5 miles in extent, on which the Dundas Brig is supposed to have been lost.

RAS-EL-ANS, or Cape Nose, in lat. 23° 56′ N. lon. 35° 48′ E. is the N. E. point of Foul Bay, having a small sandy barren Island, called Gebel Macour, or Emerald Island, situated near the shore, about 2 leagues to the S. Eastward. This Island is low, but may be seen 5 leagues; to the west and southward of it, there are several shoals. Geo. site of Ras-el-Ans, &c.

ST. JOHN'S ISLAND, in lat. 23° 38′ N. lon. 36° 10′ E., is about 5 or 6 leagues to the S. Eastward of Emerald Island, having a high hill on the S. E. end of it, that may be seen 10 or 11 leagues. Geo. site of St. John's Islands, directions how to sail from it to the northward.

The Lowajee's chronometer made it 3° 2′ W. from Juddah. It is safe to approach on the east, south, and north sides.

Ships generally endeavour to make this Island on their passage to the northward, to ascertain their situation; and some navigators prefer working near the Egyptian Coast when to the northward of it, although there are several dangers near this coast, and also near mid-channel; but either of these routes are preferable to that along the Arabian side, where the dangers are more numerous. The shoals near mid-channel, and off the Egyptian Coast, between St. John's and Koseir, which are known to exist, are the following.

REEF OF BREAKERS, seen by the Fury schooner, in lat. 24° 4′ N. lon. about 36° 16′ E., or 9 leagues to the northward of St. John's. Geo. sites of shoals between St. John's and Koseir.

THREE SMALL ISLANDS, surrounded by reefs, in lat. 24° 25′ N. distant from the Egyptian coast 5 or 6 leagues, and extending N. N. W. and S. S. E. about 3 leagues. These were seen in the Swallow sloop of war, and called in succession, South Island, Grove Island, and Sandy Island.

DÆDALUS SHOAL, in lat. 24° 58′ N. lon. 35° 56′ E. is just above the water's edge, and about 2 or 3 cable's lengths in extent. This shoal was seen by H. M. ships Dædalus and Leopard.

CENTURION'S SHOAL, in lat. 25° 20′ N. lon. 35° 48′ E. is a reef about the size of that last mentioned, seen in H. M. S. Centurion, and other ships. Both these shoals are steep to, 40 fathoms very near them.

REEF OF BREAKERS, in lat. 24° 54′ N., about 5 leagues from the Egyptian Coast, and another reef 4 leagues farther southward, much nearer the shore than the former. These were seen in H. M. S. Swallow. There is said to be another reef in lat. 25° 8′ N. The numerous shoals situated between lat. 24° and 25° N., render this place dangerous in the night.

Many shoals between 24° and 25° N. lat.

In lat. 25° 2′ N. about a league distant from the Egyptian shore, the small Island Gebel Siberget is situated.* From hence, the coast is thought to be clear of dangers as far as Koseir, having no shoals any where, except off the Arabian side, which should never be approached too close.

BROTHERS, are 2 low Islands, in lat. 26° 19′ N., lying in a N. W. and S. E. direction from each other, distant 2 miles, about 10 or 11 leagues to the E. N. Eastward of Koseir. The northernmost is about ½ a mile long, and the other half that length: they are steep to, all round, but cannot be seen above 5 leagues.

Brothers described.

KOSEIR, OR KOSIRE, is a small town, in lat. 26° 8′ N. lon. 34° 15′ E. by lunar observations and chronometers. There are few inhabitants at this place, and a fort in ruins. The road is confined, and cannot contain more than 4 or 5 ships in safety, the quality of the ground being very indifferent for anchorage, and it is much exposed to easterly winds. On the first appearance of an easterly wind, ships should put to sea, for the bank of anchorage being of small extent, they are obliged to lie near the shore, and there is always a heavy swell setting into the road.

Geo. site of Koseir.

The northern part of the road, is formed by a reef of rocks, steep to. A ship may anchor in 13 fathoms, with the body of the fort N. W. ½ W., a large ½ mile off shore, or farther in, where the depths are less, 7, 8, and 10 fathoms, and be sheltered from northerly winds.

The water at this place is indifferent, as it is in most parts of the Red Sea.

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# *INSTRUCTIONS to Sail from KOSEIR, up the SEA of SUEZ.*

## ISLAND, DANGERS, AND HARBOURS IN THE PASSAGE.

IN THE SOUTHERN PART OF THE RED SEA, in the vicinity of Mocha, southerly winds are prevalent, but they seldom extend so far as 20° N., for light winds and calms are frequent in 19° to 21° N. lat. In the northern part of this sea, adjacent to

General description of winds in the Red Sea.

* In lat. 25° 49′ N. lon. 35° 40′ E. the Babelmandel saw the appearance of 3 Islands, nearly in mid-channel, but their existence is very doubtful.

Koseir, northerly winds prevail during the greater part of the year; ships, however, which sail well on a wind, may generally be able at all seasons to beat up as far as Koseir; but the north-westers blow so violent down the sea of Suez, that it is frequently impracticable for a ship to beat up that part of the Red Sea, particularly in June, July, and August. The months of December, January, and February, are the proper months for proceeding up the sea of Suez, southerly breezes being frequent in this season.

To sail from Koseir to the Island Shadwan.

A ship departing from Koseir, or the Brothers, bound up the sea of Suez, may steer direct for the S. E. end of the Island Shadwan, or work up in the middle of the Red Sea, there being no known dangers in this space except the Ras Sellah Shoals and others near the Arabian Coast, and some supposed banks very near the Egyptian shore. This shore may be approached with greater safety than the former coast, by ships working from Koseir to the northward.

Geo. site of the Jaffatine Islands.

JAFFATINE ISLANDS, distant from the Egyptian Coast 2 and 3 leagues, extend from lat. 27° 6′ N. to 27° 14′ N., their lon. about 33° 46′ E. These are a group of low islands which cannot be discerned farther than 4 or 5 leagues from the deck. On the east side they are clear of dangers, but between them and the main, there is *no apparent* safe channel for large ships, although there is said to be anchorage on the west side of the 2 small Easternmost Islands, betwixt them and the south point of the Long Western Island, the entrance into which anchorage is from the southward.

and of Shadwan.

SHADWAN, the largest Island in the northern part of the Red Sea, is high, and may be seen at the distance of 10 or 11 leagues. It is steep to, on the east side, having no soundings at ½ a mile distance: there is said to be indifferent anchorage within its western extremity, amongst the shoals which environ that part. The S. E. end of Shadwan, is in lat. 27° 26′ N. lon. 33° 54′ E., distant 5 or 6 leagues from the Jaffatine Islands to the N. N. Eastward. Nearly in a direct line between them, in lat. 27° 20′ N. there is a dangerous shoal about 6 or 7 miles to the southward of Shadwan, which must be avoided in passing. The variation off this Island in 1801, was 11½° W.

The entrance into the sea or gulf of Suez, is between Shadwan Island and Ras Mahomed (the extremity of the peninsula that divides the Gulf of Akaba from that of Suez) and is about 4 leagues wide.

Ras Mahomed, and the adjacent Coast.

RAS MAHOMED, in lat. 27° 43′ N. lon. 34° 15′ E., or on the meridian of Koseir by chronometer, distant about 8 leagues to the N. E. of Shadwan, is a low sandy point, not discernible until very near it; but over the point, there is a chain of high hills, extending to the northward as far as Mount Sinai, that may be seen 15 or 16 leagues distance. There is no danger about the low sandy point, the water being deep close to the shore. Directly east from Ras-Mahomed, in the middle of the entrance of Akaba Gulf,* the Island Tiran is situated, which has a gradual declivity from the centre toward each end, and may be seen at the distance of 10 or 11 leagues.

Beacon Rock and Shoal, Other Shoals.

Near 5 leagues west from Ras Mahomed there is a large shoal, with a rock above water on its south end, like a small boat under sail, called by the pilots Beacon Rock: between this shoal and the land of Ras Mahomed, there is said to be good anchorage. Along the eastern coast, from the shoal here mentioned, nearly to Tor Harbour, the shore is lined with dangers, some of them projecting nearly mid-channel.

Directions.

The common passage is to the westward of these dangers, between them and the islands or shoals near the western shore. Great care is requisite in working between Shadwan and Tor, particularly in the night, or in hazy weather, the channel being narrow and bordered by shoals on the eastern side; islands and shoals also bound its western side, to the distance

* The navigation of this gulf, or N. E. arm of the Red Sea, is at present unknown to Europeans.

of 7 leagues from Shadwan, but this is the safe side to work in during the night, as Jubal is safe to approach.

Jubal; JUBAL ISLAND, in lat. 27° 36′ N. distant about 3½ leagues to the N. West of the N. W. end of Shadwan, has on it a kind of peak, or sea-mark: it is high, and steep to, on the east side, but in passing along, a ship ought not to haul into the opening between it and Shadwan, on account of the Clive's Shoals, situated near the latter island, on which the Lady Clive Transport was wrecked. A chain of Islands joins to Jubal at the north end, appearing as part of that island. Close to the Clive's Shoals on the south side, there are soundings from 6 to 10 fathoms, and 30 to 40 fathoms near their northern extremity.

and Fair Island. FAIR ISLAND, lies to the N. W. of Jubal, about 4 miles distance, being of considerable size, with a peak on it, safe to approach on the N. E. side, and there is among the shoals between it and Jubal, a passage leading from north to south, to a place of anchorage, called Fair Haven, on the S. E. side of Fair Island, which is safe inside, affording good shelter from N. Westers; but the entrance is rather intricate for large ships, if unacquainted, although the depths in it are from 12 to 27 fathoms.

To the northward of Jubal, lies a small sandy Island, appearing to be joined to it, when seen from the southward, which has sometimes been called Fair Island, and is destitute of anchorage, but the Fair Island that forms the haven of this name, lies about 3 miles to the westward of the former.

There is another anchoring place in lat. 27° 46′ N. under a reef that projects from Long Island, with Jubal bearing S. S. E. 6 miles, Fair Island S. E. ½ S. 4½ miles, in 7 or 8 fathoms water, a remarkable rock or sandy hummock by itself off the west end of Long Island bearing W. S. W., and the eastern extreme of the reef you lie under N. E. ½ N., distant 1½ cable's length. This situation being on the western shore, if a ship weigh from it at day light, with the wind a little favorable, she may be able to weather the north end of the West Shab, situated in lat. about 27° 54′ N.

Islets and shoals between it and Zeite. From Fair Island to the S. E. extremity of the high land of Zeite, a chain of low rocky islets and shoals lines the west side of the channel, which is in this part rendered intricate by an extensive shoal on the opposite side, called by some Carrangar or Coringa Shoal.* This shoal is about 7 miles distant to the N. Eastward of Fair Island, and bears about N. ¾ W. from the east end of Shadwan, 6 or 6½ leagues. On the south end of it, there is a large rock, nearly covered at high spring tides, this rock when in one with Mount Agrib, bears N. W. by W. westerly. With N. W. winds, a ship may anchor under lee of Carrangar Shoal in 18 or 20 fathoms water.

Carrangar Shoal.

Peninsula of Zeite, and Mount Agrib. The S. E. extremity of the peninsula of Zeite is in lat. 27° 46′ N. distant from Jubal about 5 leagues to the N. Westward. The south end of this peninsula is of moderate height, the highest part is close to the sea, in lat. 28° N., which is called the N. E. part; between these it is lower, and forms a bight, over which Mount Agrib is seen. This mount is about 3 leagues inland, in lat. 28° 10′ N., directly west from the north part of Zeite; between them there is a deep bay, which has occasioned the peninsula of Zeite to be often mistaken for an island. Mount Agrib on with the gap in the high part of Zeite N. W. by W. ½ W. is in one with the Swallow's Shoal, which has 4 fathoms on it, and is situated to the N. Westward of Carrangar Shoal.

Directions from Shadwan through the channel, A ship bound up the sea of Suez, may pass Shadwan at any convenient distance: but when past this Island, she ought not in working, to stand into the open space between it and

* There is a group or chain of dangerous shoals fronting the eastern shore, and extending more than half-way over to Jubal, having narrow channels between some of them. On one of these, the Gabriel transport was wrecked, and the Calcutta was lost to the northward of Zeite, on the western shore.

Jubal, nor so far over as to approach the dangers on the eastern shore. Having got abreast of Jubal, it will be prudent to make short tacks in the channel, keeping nearest to Jubal and Fair Island, to avoid the Carrangar Shoal on the opposite side, which lies about half-way between these Islands and the eastern shore. The breadth of the channel in this part is not above 4 or 5 miles, which renders it dangerous to work here in the night. A good mark in day-light is to keep Mount Agrib open to the westward of the high land of Zeite bearing about N. W. ¾ W., for when it bears N. W. by W. Westerly, it is in one with the Carrangar Shoal, and just on with the high land of Zeite.

When to the northward of Jubal and Fair Islands, the low rocky islets and shoals on the west side of the channel will be perceived, which extend to the southern extremity of Zeite. Under the shoals, and a small island close to the south part of Zeite, the Wasp discovered a place of anchorage. A shoal with 7 fathoms on its outer edge, projects from one of these islets. In passing along, a ship should not stand so far to the westward as to touch an imaginary line joining the east end of Shadwan and the N. E. or outer part of Zeite, which passes outside of all dangers in the west side of the channel. The land of Egypt to the westward of Shadwan and Jubal, is high and uneven.

Captain T. Kydd, advises ships going to enter the Sea of Suez, to proceed agreeably to the directions now to be given. Or from Ras Mahomed towards it.

Ras Mahomed, cannot be seen farther than 3 or 4 miles, but there is no danger near it, the water being very deep close to the shore. In crossing over toward the Straits of Jubal, the first danger is the shoal with the Beacon Rock on its south end, which bears west from the low sandy point Ras Mahomed, 4 or 5 leagues. If the weather has an unsettled appearance, a ship ought to keep plying betwixt the Beacon Rock Shoal and Ras Mahomed, as the channel in the narrows is very contracted, and not much known.

In the day it generally blows strong, but moderate during the night. If at day-light Mount Sinai is enveloped with clouds, the wind will most assuredly blow strong that day, but should the mountains be free from clouds, moderate weather will prevail.

When the weather is moderate, a ship should stretch well up toward Jubal, and make several tacks across the channel at the entrance of the Straits before dark, to ascertain the situation of the dangers. Having followed this method, the Lowajee, at sun-set, in a clear channel, had the body of the high land of Zeite bearing N. W., the north end of Jubal W. 11° S., Shadwan from S. by W. to S. by E., and the extreme of the land about Ras Mahomed, E. 5° N. These bearings they endeavoured to preserve as near as possible during the night, sometimes lying by, at other times working under topsails. A little before day-light they made a board toward Jubal, and were distant from it at day-light about 2 miles, then made sail with a fresh breeze at N. W. The first tack to the N. Eastward, they saw a shoal, which bears from Jubal N. E. ¼ N., distant about 4 miles, this being the breadth of the channel here, and seems to be the most contracted and dangerous part of the Straits: a few miles farther to the northward, the channel becomes more enlarged.

Jubal bearing about S. W. there are soundings from 40 to 50 fathoms in some places, decreasing to 20 fathoms as the distance is increased to the northward, and then deepen again to 35 and 40 fathoms. When the south part of that which is called the high land of Zeite, is bearing W. ½ N. a ship is clear to the northward of the Carrangar Shoal, and the channel becomes wider; but the western shore is still safest to approach, the high land of Zeite being bold, and safe to borrow upon. Soundings.

Nearly in mid-channel about 3½ leagues N. by E. from the high land of Zeite, there is a bank of coral rocks and sand, extending in a direction parallel to the coast about 2 leagues, having 4 and 5 fathoms rocks near the south end, and 6 or 8 fathoms toward the north part. On both sides of this bank, the quality of the ground is black sand, and the depths decrease gradually in approaching it, from 26 to 8 fathoms, sandy bottom at the north end. On the south end, there are 18 fathoms sand. When Mount Agrib is just open to the northward Bank near mid-channel.

of the bluff point, that forms the northern extremity of Zeite Peninsula, bearing W. by N. ¼ N. a ship will be in a line with the shoalest part of the bank.

Narrows. THE NARROWS, formed between the East and West Shab, may be adopted, when strong northerly winds and a heavy sea, prevent a ship from gaining ground in the large channel to the westward of the Shab, although the latter track should always be followed when the weather will admit.

If a ship be at the anchorage in Fair Haven, or off Fair Island, and strong N. Westers should make it advisable to pursue the passage through the Narrows; observe, that from Fair Island the Carrangar Shoals lie N. E. ½ N. distant 8½ miles, haul close round them, also round the South end of the Western Shab, you are then in the Narrows. The channel is about 2 miles wide, with very smooth water, and although a ship is brought under close reefed topsails, she may work through in 2 days, anchoring at night: whereas, in the Western Channel, the heavy sea frequently prevents ships from gaining ground, even in favorable weather; besides, their crews are worn out with fatigue, working these ships day and night with blowing weather, in a channel only 5 or 6 miles wide, having no soundings as a guide to point out the approach to the dangers on either side.

Directions to sail through them.

In the Narrows, the people have the advantage of rest in the night: if it blow too hard to be under way in the day, by remaining at anchor, sails may be repaired if necessary, or any other work may be done. When anchoring in the Narrows, it will be prudent to give the reefs a small birth, to avoid detached pieces of rock which might injure the cables.

The Eastern Shab is connected with the shore, having no channel within it. The Swallow's Shoal bears nearly West from the North end of the Western Shab distant about 4½ miles, and is about ¾ mile in extent; the least water we had on it was 4 fathoms, and a good mark to know when on it, is Mount Agrib on with the high northern part of Zeite, bearing N. W. by W. ½ W.

Places of shelter to the Northwestward.

Having cleared the Narrows, that is, if a ship can round the North end of the Western Shab, a W. by S. course will carry her to good anchorage under a small sandy point and reef, which lies off the South end of Zeite, should she be in want of shelter. This anchorage is in 11 fathoms, with the extreme of the reef bearing N. ½ E., and the lat. is about 27° 49′ N., already mentioned above, where the Wasp anchored.

The next anchoring station is in lat. 28° 0′ N. on the eastern shore, having several patches of rock near it, one bearing N. W. by W. and another W. S. W. These are all without you, excepting that bearing N. W. ½ N. under which you lie in 9 fathoms about 1½ mile off shore, with a house bearing N. ½ E., and Tor Hill, or bluff part of the Neat's Tongue over Tor N. by W.; this is a good, and safe anchorage.*

Geo. site of Tor-Harbour with directions.

TOR HARBOUR, opposite to the high land of Zeite, is in lat. 28° 19′ N., lon. 33° 28′ E. by observations ☉ ☽ ✱. This is a safe harbour, formed by a reef which projects from its northern extremity to the southward, having a great surf on it at times. A ship coming from the northward should run close along the reef, until she open the town, and haul round its southern extreme; she may then anchor in any depth at discretion, from 8 or 9, to 5 fathoms. There is a shoal of coral rock to the S. W. of the anchorage, off the entrance of the harbour, which is about 1½ mile long, extending about N. N. W. and S. S. E. This shoal has only from 6 to 10 feet water on it in some places; a ship leaving the harbour may sail to the southward between it and the main, in regular soundings, by steering S. by W. and S. S. W. along the eastern shore. This is the channel generally used when bound out, as the winds are northerly three-fourths of the year, and the northern channel is frequented by vessels

* These remarks for passing through the Narrows, were communicated to me by Captain J. A. Pope, of the ship Minerva, of Bombay.

bound into the harbour. When the sun shines, a green shade is reflected on the rocks, by which they may be avoided. The depths in both channels are in general from 7 or 8, to 10 and 11 fathoms, regular soundings. During the violent N. W. winds, ships bound to Suez, are often obliged to take shelter in this port, where the water is better than at any place in the Red Sea; it is procured from 3 wells abreast the anchorage, which are about 200 yards from the beach. Provisions, or other articles of refreshment, are not to be obtained. Good water.

The town which is situated at the N. E. part of the harbour, is inhabited principally by Greeks, and Bedoin Arabs. Near the town, there is the remains of a well constructed fort. In 1800, the variation was 12° W. The tide flows to 10½ hours, on full and change of moon, and rises 5 or 6 feet. The land over Tor Harbour is high, with several rugged peaks.

MOUNT SINAI, is situated to the northward of the town, at 6 or 6½ leagues distance, which has two sharp peaks; on this mount there is a monastry, inhabited by some Greek priests. Mount Sinai.

CAPE JEHAN, in lat. 28° 33′ N. is about 8 or 9 leagues to the N. W. of Tor Harbour, having a peaked hill near it, and Mount Sinai about 9 or 10 leagues inland to the eastward. In this space, there are no known dangers, but the bank near mid-channel opposite to Tor, (which has been already described) should be avoided by large ships. The depths in mid-channel between Tor and Cape Jehan, are from 30 to 40 fathoms, decreasing near the shores. Cape Jehan, coast and channel.

On the projecting part of the western shore opposite to Cape Jehan, in lat. 28° 30′ N. the Calcutta transport was wrecked, by getting on shore in the night, when the low land near the sea was not discernible, nor the high land farther back in the country.

To the northward of Cape Jehan, the land is low, and forms a bay. About 1 league to the N. Westward of the Cape, there is said to be a small shoal, having on it 4 fathoms water.

STUMMUM, or HAMMAM POINT, in lat. 29° 14′ N., is low and bluff. Between it and the former cape, some reefs project from the eastern shore, which ought to be avoided in passing along, particularly Ras Selima in lat. 28° 55′ N. is fronted by a reef, having anchorage on the S. E. side of it, in 7 or 8 fathoms in a little bay. Stummum Point.

ZAFRANA POINT, in lat. 29° N. on the western shore, is very low, having a shoal about one league to the northward of it, projecting about 2 miles from the shore. From this point the coast of Egypt extends N. by W. and N. N. W. to Abu Duradja Point, in lat. 29° 33′ N. and is generally low and sterile near the sea, but high inland. The depths hereabout, are from 28 to 38 fathoms in mid-channel, decreasing near either shore. Western coast to Abu Duradja Point.

BREAKER POINT, in lat. 29° 23′ N. situated on the eastern shore, about 4 leagues to the N. W. of Stummum Point, is low, and a reef projects from it to a considerable distance, close to which, the depths decrease gradually to 6 or 8 fathoms. About 2 leagues farther to the northward lies Ras Mesalle, having a reef projecting from it about a mile. Five leagues from Ras Mesalle there is another point, and 3 leagues beyond this, in lat. 29° 51′ N. Foul Point is situated. This is the south point of a bay (called by some Simon's Bay) where there is said to be fresh water at a spring called the Fountain of Moses, a considerable way inland. A reef projects a small distance from Foul Point, and about 1½ mile N. N. W. from it, 2 small shoals are said to be situated, having 4 and 5 fathoms on them, and 9 or 10 fathoms around. At Mulanimil, distant 4 or 5 miles to the north of Ras Mesalle, there are some strong water courses near the beach, where by digging down to a soft loam, Sir Home Popham discovered good water; about 30 tons may be got in a day. Eastern coast, from Breaker Point to Simon's Bay.

Adago Point and Bay.

ADAGO POINT, in lat. 29° 52′ N. forms the S. W. extremity of the bay of Suez; it is a long flat sandy point, at the foot of Mount Adago, having a shoal extending from it near a mile. Between Mount Adago, and Abu Duradja Mount, the coast is low, and forms the Bay Adago, where ships may receive shelter in N. W. winds, there being 7 fathoms within a cable's length of the shore, at the north part of the bay. There is no danger in sailing into this bay, but if entering it from the northward, the shoal off Adaga Point must have a birth of $\frac{1}{2}$ or $\frac{3}{4}$ of a mile. There are some wells of brackish water near the beach, but the coast around the bay is a sandy desert.

Directions for sailing to Suez Road,

SUEZ BAY, OR ROAD, ought to be entered with caution by those unacquainted, the true position of the shoals not being perfectly ascertained. In proceeding to this place, a ship should keep mid-channel between Adago Point and the eastern shore, steering about N. or N. $\frac{1}{2}$ E.; she will carry regular soundings till nearly abreast of the point, and will then pass over a flat, shoaling on it from 9 to $4\frac{1}{2}$ fathoms, and may probably have a cast or two of $\frac{1}{4}$ less 4 fathoms. When over the flat, she will deepen again to 11 and 13 fathoms, until

Description of the bay.

the depth decreases on another flat to $4\frac{1}{2}$ fathoms, gradual soundings. Having crossed this 2d flat, the water again deepens, and afterward, shoals regularly to the anchorage.

To the northward of Adago Point, in the western part of Suez Bay, there are some rocky shoals, on which the sea sometimes breaks.

Nebah Point, on the east side of the bay, is 4 or 5 miles to the southward of Suez town; it is low, having a shoal projecting from it about $\frac{3}{4}$ of a mile; the coast adjacent is a low sandy desert. Working up to the anchorage of Suez, care is requisite to avoid a shoal, situated about $2\frac{1}{2}$ miles from Nebah Point, bearing from it nearly W. To the westward of it there is a safe channel, but it is preferable to pass between it and Nebah Point. H. M. S. Leopard working up to the road, grounded on the eastern shore, after the helm was put down in 6 fathoms, where she lay 4 hours in soft mud, and floated with the flowing tide. When aground, Suez Town bore N. 11° E. to N. 18° E. and Adaga Point S. 44° W. she afterwards anchored in 5 and $4\frac{1}{2}$ fathoms mud, in Suez Road, with the town bearing from N. 25° E. to N. 32° E. Adago Point S. 34° W., and Point Abu Duradja, the southern extreme of the land in sight, S. 14° W., distance off Suez Town $2\frac{1}{2}$ miles. The lat. observed at anchor was 29° 57$\frac{1}{2}$′ N.

The banks extending from the entrance of Suez Inlet, are generally dry about half tide. The bar is narrow, and has not more than 10 or 11 feet on it at high water, and is nearly $2\frac{1}{2}$ miles from the town. Inside the bar, in the channel leading between the sands to Suez,

Inner Harbour.

the depths are 8 and 9 feet at low water, and 15 or 16 feet at high water spring tides. This is the inner harbour, where the dows and country vessels lie, when they require careening, which is done at the back of the town in a cove or basin.

All along the eastern shore to the distance of 4 or 5 leagues from Suez, there is a continued flat, which is steep to. The soundings are generally soft in the bay, except upon the

Geo. site of the Town.

shoals. To the westward of the town, there is a well of brackish water, where the Camels stop on the route to, or from Cairo; the water to supply the shipping and town of Suez, is also of inferior quality, and carried on camels, from springs situated at a considerable distance to the eastward of the road. The country around being a desert, few articles of refreshment are procurable. The lat. of Suez is 30° 0$\frac{1}{2}$′ N., lon. 32° 28′ E. by eclipses of Jupiter's satellites, and mean of many lunar observations. Variation 12° W. in 1800. The tide flows to 12 hours, on full and change of moon, and rises 6 or 7 feet. The thermometer sometimes rises from 57° to 100° in a few hours.

# *OF WINDS and CURRENTS; DIRECTIONS for SAILING to, and from the RED SEA.*

PRIOR to giving directions for sailing to the Red Sea, it may be expedient to describe the prevailing winds, near the entrance, and within that sea. Winds in the southern part of the Red Sea,

At Mocha, and throughout the southern part of the Red Sea, the southerly monsoon predominates about two thirds of the year, commencing in October or November, and ending in May or June, when the northerly winds set in, and continue near 4 months. During strong southerly winds, the current frequently sets through the straits with rapidity into the Red Sea. With these winds the atmosphere is generally red and fraught with vapour. A great haze then prevailing, prevents objects from being seen, unless very near. About the full and change of moon, the southerly winds are sometimes checked, and replaced by breezes from the northward, which continue 2 or 3 days, and greatly cool the air. The currents at such times are liable to change, and run in opposition to the wind, but in general, they set with it in the Red Sea; also in the straits, or in the gulf outside, they mostly run with the wind. and currents.

In the gulf outside the Red Sea, between the coasts of Arabia and Africa, easterly winds mostly prevail from the early part of October, to May; then the westerly winds commence, and continue about 6 months. Near the Arabian Coast, the monsoon from westward sometimes begins more early, about the middle of April; the easterly winds setting in on the same coast, early in October, with a current running to the westward. Off Cape Guardafui, between it and Socotra, and in the vicinity of this island, the current begins to set to the northward in April, increasing in strength toward the latter part of the month. As a general rule it may be observed, that from October to May, or June, the wind is from eastward in the gulf, outside the straits; and about S. S. E. inside in the southern part of the Red Sea. During the other 6 months, it is west in the gulf; and N. W. in the Red Sea from June to October. This rule is not applicable to the northern part of the sea, for the northerly winds there, are prevalent during 9 months of the year, particularly in the sea of Suez, and frequently blow strong;* at all times in this sea, southerly breezes are of short continuance. It is almost impossible to beat up against the northerly winds to Suez, in June, July, and August. Ships bound to that port, should endeavour to reach it before the 1st of May, or more early if possible; and although, when bound outward, they may get down the sea of Suez at any season, it is prudent, if bound to a distant port, that they depart from Suez by the 25th or 30th of August, to enable them to clear the straits of Bab-el-mandeb in September, before the easterly winds commence in the gulf outside. Ships leaving the straits after the 10th of August, should keep near the Arabian coast, to avoid the strong current, which then begins to set to the S. W. and Westward, at the rate of 2 or 3 miles an hour along the African shore, from Cape Felix to Zeyla; but when near the meridian of Cape Guardafui, the open sea is the best track to make easting, keeping well out from the Arabian shore.

Winds outside. General remark. Winds in the northern part of the Red Sea. Periods for arriving and departing from Suez. How to steer from the straits late in the season.

Being bound from BOMBAY, (or any other port on the northern part of the Malabar coast) to the RED SEA, in November and December, a ship should steer a direct course to pass between the Island Socotra and the Arabian coast; she ought to continue to steer after-

How to approach the Red Sea in Nov. & Dec.

* The strong N. Westers that prevail in the sea of Suez, seldom blow to the southward of the Brothers. And the strong southerly winds which prevail at Mocha, seldom reach above 15° or 16° of North lat.; for about Juddah, and half-way up the Red Sea, the winds are often light and variable.

ward to the westward, and fall in with that coast about Aden; taking care to keep a good look out, and attend to the lead when requisite. In these months the monsoon blows strong, particularly to the westward of Socotra; the weather is also frequently dark and cloudy, and unfavorable for making that Island, which is not necessary at this season. The passage will be speedy to the straits. In January and February, a ship performing this passage will experience nearly the same winds, but more moderate, with fair weather; she may therefore, make the N. East end of Socotra, if thought expedient, which is high land, and then steer along the north side of the Island, shaping a course from its west end direct for Aden; or she may, as before, steer to the northward of the Island without seeing it, direct for the coast of Arabia near Aden.

In Jan. and Feb.

In March and April, the winds are less constant than in the four preceding months, often veering between N. N. W. and N. N. E. in alternate brisk and light breezes, with calms at times, and settled pleasant weather. In these months, a ship should steer a course from Bombay to pass to the southward of Socotra, for early in April the N. E. monsoon is nearly expended about this Island, and also on the coast of Arabia, which is succeeded by light breezes from S. W. and Westward, with frequent calms. The current also begins to set strong to the northward about Socotra, and between it and Cape Guardafui; it is therefore prudent about the latter part of March, or early in April, to pass on the south side of that Island, at the distance of 12 leagues, to be enabled to reach Cape Guardafui with the S. Westerly winds, which may then be expected.

And in March and April.

Some ships which left Surat late in March, made the east end of Socotra in the middle o fApril, one of them kept working in sight of that Island 14 days, with S. Westerly winds and calms, and was in danger of losing her passage, the current being constantly against her. The other ship stood with W. S. W. and S. W. winds, to the southward of lat. 3° N., then got the wind favorable, and had from that lat., a quick passage.

The Latham, sailed from Surat, April 8th, 1758, and arrived at Mocha 12th of May. She went as far south as lat. 9° 50′ and 10° N., had light variable winds, mostly from N. E. and S. E.; and strong currents setting northward, on approaching Cape Guardafui. She made the land in lat. 11° 12′ N. and had that day 34 miles of northerly current, in running along the coast of Africa. The Gunjavar of Surat, left that place the day after the Latham, saw Socotra, and fell in with the Latham off Cape St. Peter. Although the Gunjavar sailed well in light winds, it was imprudent to make Socotra so late in the season, for the passage might have been endangered thereby.

When a ship sails from Bombay or Surat in April, she ought certainly to steer to the S. Westward, to be able to pass well to the southward of Socotra; for should she not be able to weather that Island with the S. W. winds, it is most probable, that to save the passage, she will be obliged to stand to the southward nearly to the equator, before she can be certain of reaching the coast of Africa on the other tack. If late in April, when a ship departs from Bombay, a course more southerly will be requisite, to enable her to fall in with the coast of Africa to the southward of Cape Guardafui, for at this late period she will probably meet with the S. Westerly winds long before that coast is approached. The coast may be made any where between Cape Orfui and Cape Guardafui, but the deep bay to the S. W. of the former Cape should be avoided, as the danger is great, if a ship get into this bay with strong S. E. winds, or in the night; which has been pointed out in describing the coast of Africa from the equator to Cape Guardafui.

Where to make the land.

When a ship has made the land, it will be prudent to pass close round Cape Guardafui; should April be far advanced, she ought to keep along the coast to Burnt Island, and then steer over for Cape Aden. If more early in the season, and abreast of Cape Guardafui with a steady fair wind, a direct course may be steered for the coast of Arabia about Cape Aden. In May, June, July, and August, when the S. W. and W. S. W. winds blow strong, it may sometimes be tedious beating along the coast of Africa from Cape Guardafui to Burnt

Directions when late in the season.

Island, but it is proper to persevere by working near the coast until up with the Island just mentioned, and then cross over for Aden. A ship that sails well, may work up from Aden to the straits of Bab-el-mandeb, during the strength of the westerly monsoon, if every advantage is taken; particularly on the springs, when the current is liable to change and set to the westward; the wind at such times is also subject to small changes, or in these months, a quicker passage may sometimes be made, by keeping near the African Coast till about 20 leagues west of Burnt Island, then cross over for the straits of Bab-el-mandeb, or as near them as the wind will admit.

Time to sail from Bombay to the Red Sea.

The season for the passage from Bombay to the Red Sea, is from October to April, but the best time to sail, is from the 1st of February to the middle of March; ships which sail from the former port after April, must proceed by the southern passage, and run down the westing in south lat.: they will have strong southerly winds on the east coast of Africa about Cape Orfui, should they make the land there, during the S. W. monsoon. In beating from Cape Guardafui to Burnt Island, ships should have good sails bent in June, July, and August, for the wind frequently blows in severe gusts.* In May, it is more moderate, and generally blows farther from the southward, making the progress to the westward along the African coast, less difficult than in the subsequent months. Ships, may also, cross over for Aden with greater confidence in May, than at a later period.

To sail from the southern ports on the Malabar coast, toward the Red Sea.

SHIPS bound to the RED SEA, from AJENGO, COCHIN, CALICUT, or other ports on the southern part of the Malabar coast, may steer directly to the westward through the most convenient channels among the Laccadiva Islands, in November, December, January, and February. Those which sail from Cochin or Anjenga, ought to pass to the southward of Seuheli-par, keeping in lat. about 9° 20′ or 9° 30′ N. but ships departing from Cannanore or Mangalore, should pass to the northward of all the Islands. In March and April, the prevailing winds between the coast of Malabar and the east coast of Africa, are from North to N. W., it may therefore, be proper, to keep near the coast beyond Mount Dilly in these months, to be enabled to pass to the northward of the Islands, and Shoals: should this not be thought requisite, by ships sailing from Cochin, or Anjengo, they ought to keep well up toward the Islands Kalpeni and Seuheli-par, if the 9 degrees' channel is adopted, as the current generally sets to the southward in these months, toward the Maldivas.

When clear of the Islands, in November, December, and January, a direct course may be steered to pass Socotra on the north side. In February, a ship may steer to the westward in about 11° or 11½° N. lat., but late in March, or early in April, it is proper to keep farther to the southward, in lat. 9° or 10° N., as the winds may permit. In April, they generally continue between the North and N. W. points, a ship must then, keep close to the wind, and may sometimes be obliged to make a short tack to the northward, to prevent her running too much to the S. West; but these trips should seldom be made, as getting to the westward, is most essential. During this month, there can be no reason for standing to the southward near the equator, but in May, when the S. W. monsoon may be daily expected, it is prudent to keep well to the southward.

Late in April, or early in May, when a ship has approached within 2° or 3° of the African coast, she will generally meet with S. Westerly winds, which draw more to the southward near the shore; she must endeavour to make the coast to the south of Cape Guardafui at this period, for by falling to leeward of Socotra, the passage would become uncertain; to save which, she might be obliged to stand on a wind to the southward and cross the equator, before sufficient westing could be obtained.

* Some ships, in these months, have returned to Bombay, thinking it impracticable to beat up to the Straits of Bab-el mandeb, but it may be effected by a good sailing ship at all seasons, if she is well fitted with sails and other requisites.

To sail from eastern parts of India toward the Red Sea.

Ships bound to the RED SEA, from the EASTERN PARTS of INDIA, should before April, pass round the south side of the Island Ceylon, then steer along the west part of that Island to Caliture; a direct course may then be followed to pass through the 9 degrees' channel, as already described for ships sailing from Cochin or Anjenga.

In April, westerly winds being prevalent off the S. W. part of Ceylon, it is often difficult and tedious getting round it, these westerly winds are also adverse in proceeding from that Island to the 9 degrees' channel; ships, therefore, bound from the southern part of the Bay of Bengal, after March, ought to adopt the southern passage, when bound to the Red Sea. They should run into 9° or 10° south lat., to the southward of Diego Garcia, where the winds will be found more favorable in the early part of the season for getting to the westward, than in the other, or short southern route, between the south end of the Maldivas and the Speaker's Bank.

The egress difficult from the Red Sea in the easterly monsoon.

DEPARTING FROM THE RED SEA, the egress is very difficult, and seldom attempted from September to April, when the easterly monsoon blows into the gulf outside of the Straits of Bab-el-mandeb. Should a ship be able to beat out of the gulf, the same N. Easterly monsoon continues to be adverse, if she is bound to any part of India, or to the Persian Gulf.

H. M. Squadron* under Rear-Admiral Blankett, bound to Bombay, worked through the Small Strait, 16th October, 1799. On the 19th, they passed Aden with easterly winds. From hence, they worked along the Arabian Coast with the same winds, the weather generally clear, and the current frequently setting against them to the westward. On the 20th of November, they reached Cape Morebat, and were off Ras-el-had the 1st of December. From the latter Cape, they steered for Muscat to get a supply of provisions and water, but a strong N. W. wind commencing when near it, obliged them to bear away for Bombay, where they arrived on the 15th, after a passage of 2 months. Notwithstanding the tedious passage these ships experienced, they had often land and sea-breezes on the Arabian Coast, and a current sometimes in their favour. They spoke a dow off Cape Morebat, which by standing out into the open sea, got better winds, and reached Bombay 15 days before them.

When to depart from it.

In April, when Westerly and S. Westerly breezes commence on the southern coast of Arabia, ships may with safety leave the Red Sea, and proceed for the Persian Gulf, or the coasts of India: the favorable season to depart from it is, from April to September. Ships bound to Surat, do not leave Mocha till the early part of September, that they may arrive with the latter end of the westerly monsoon in Surat Road, about the 20th of that month; for it would be dangerous to run for this anchorage when the monsoon is in full force. When clear of the Straits of Bab-el-mandeb, a ship should steer to the eastward in the middle of the gulf, where the wind is more steady than in the vicinity of either shore; but if the wind is light or baffling, she must beware of getting near the African Coast, on account of calms and strong westerly currents, mentioned before.

Ships bound to Ceylon, or other parts more to the eastward, should steer a course to pass through the 8 or 9 degrees' channel, between the Laccadiva and Maldiva Islands. This route may be followed from March to November, and it is preferable to any other during this period, and may be chosen even in the strength of the N. E. monsoon, if a ship keep near Seuheli-par, in passing through the 9 degrees' channel: but from October to April, it is more advisable to pass to the northward of the Laccadiva Islands, and afterward proceed to the south along the Malabar coast to Cape Comorin, and from hence steer for Point de Galle.

* Leopard, Centurion, Dædalus; and the Bombay Frigate.

# *COAST of ARABIA from ADEN to RAS-EL-HAD, MUSCAT, and CAPE MUSSENDOM.*

## WINDS, CURRENTS, BAYS, HEADLANDS, AND SAILING DIRECTIONS.

FROM the beginning of April to September, the winds upon the coast of Arabia from Aden to Morebat, blow from S. S. W. and S. W., varying to the westward in hard squalls, sometimes accompanied with rain, during which period it seems impracticable to work to the westward along this coast, there being no safe harbours where ships can refit or receive shelter from storms. S. W. monsoon on the south coast of Arabia;

A ship touching at any place on the south coast of Arabia, ought to be guarded against treachery from the inhabitants. The Nathaniel, bound from Mocha to Bombay, on the 4th of September, 1715, anchored in 9¼ fathoms water, about 1½ mile off shore, at a village called Hawar, about 1° 10′ East from Aden, with the extremes of the land from E. N. E. to W. S. W. The natives at first were friendly, and offered to supply the ship with fresh water, bullocks, and sheep, but when the people landed from the boat the second time, they were enticed from the shore up to a tent, where 12 of them were massacred by these inhospitable Arabs. The Alert, country ship, was lately carried into Mahila Bay by some Arab Seedies, part of her crew, who had previously massacred the commander and officers of that ship.

Between Morebat and Ras-el-had, the S. W. monsoon also blows strong; but here, it draws more to the southward, in conformity to the direction of the coast. In September, the winds from eastward commence, and continue till the end of March, with frequent land and sea-breezes; the land breezes from the westward are faint, but the sea-breezes are strong from the eastward; and this is the fair monsoon, the weather being settled in general. The current frequently runs to the westward along the coast in this season, it is however liable to change at times, and set to windward. A ship that sails well close hauled, may make a passage to the eastward along this coast, during the easterly monsoon, although a speedy passage ought not to be expected in this season. The squadron of ships, already mentioned in the preceding directions, worked along the coast of Arabia, against the N. E. monsoon, and were 2 months on the passage from the Red Sea to Bombay. easterly monsoon. A passage against it, will be tedious.

A fleet of ships of war, and store ships, left Johanna 25th September, 1781, and crossed the equator on the 5th of October, in lon. 48° E., which was too far to the westward. After getting into lat. 8° 20′ N., lon. about 55° E. they had during 5 weeks light airs and calms, stood to the northward and made the coast of Arabia, near the Islands off Curia Muria Bay.

The ships of war left the convoy, and proceeded to Bombay against the monsoon; Capt. Smith, in the San Carlos, left in charge of the store ships, carried them to Morebat, where they anchored and procured some refreshments, and indifferent water.

From this place, the convoy of indifferent sailing ships, worked along the coast against the monsoon to the Island Mazeira, and meeting there with a southerly wind, steered direct for Bombay.

These statements evince, that a passage may be made against the N. E. monsoon, on the coast of Arabia, but it should not be attempted except under exigent circumstances; for it must be always unpleasant and tedious.

Although on this coast, the currents generally set with the wind during the easterly monsoon, they frequently change, and run against it, 3 or 4 days, about the full and change of moon. This is favorable for ships working to windward near the shore, which may be

approached close in this season, as the winds seldom blow strong toward it, during the easterly monsoon.

Soundings. On some parts of the coast, the soundings extend to a very short distance, but in general several miles, and in some places several leagues from the shore.

Black Point. BLACK POINT, in lat. about 13° 7′ N., bears N. E. by E. from Cape Aden, distant 14 leagues, terminating in a point of Black Rocks, from which it is named, and being moderately elevated, it is easily distinguished in coming from the eastward: the coast between it and Aden, is bold to approach.

To the eastward of Black Point, the land of Sauger is discernible, sloping to seaward, and ending in a sandy down and beach: the tops of the mountains have an even contour, like one continued hill for 12 or 13 leagues, then there is a small break, where the hills become irregular, forming double or treble ridges as far as Cape Hargiah.

Cape Hargiah. CAPE HARGIAH, in lat. about 13° 30′ N. bearing about E. N. E., 25 leagues distant from Black Point, projects out from the high land in a low rugged point into the sea, and it is said to form the S. W. side of the entrance into the Bay of Hargiah, or Cana Canim, which is narrow at the mouth, with some islands in it, but extends inland to the N. W. in the form of a large lagoon, with the Arzillah Hills to the westward.

Some ships have lately passed near Cape Hargiah, without perceiving any appearance of the Bay, and the coast between it and Black Point, was found steep, and safe to approach, destitute of soundings at 4 or 5 leagues distance.

Macula Bay. MACULA BAY, in lat. about 13° 57′ N. lon. 47° 58′ E., bears from Cape Hargiah about N. E. by E., distant 21 leagues, and is about 2 leagues deep, and 5 leagues broad, with high land around. At the N. E. part, there is a hill elevated a little more than the others, where small vessels may receive shelter from northerly winds, blowing between E. N. E. and N. W., by anchoring in 3½ fathoms, about a cable's length from a small rocky point, where there is no danger but what is visible, except a reef of rocks about 3 cables lengths to the N. W. of the point, on which the sea sometimes breaks. The east point of the bay bears from this anchorage about S. E. distant 1 league, and the other extremity of it about S. W. Ships may anchor in 15 or 16 fathoms, 2 or 3 miles off shore. At the bottom of the bay, there is a small town, but refreshments are not to be expected, water, and every article of provision (except fish) being scarce, and the inhabitants are not to be trusted.

Shahar. SHAHAR, a considerable town, distant about 13 or 14 leagues to the E. N. E. of Macula Bay, stands on a flat sandy desert close to the sea, and when seen at a distance, it appears white and conspicuous, and may be known by two adjacent hills. Ships may anchor at this place in 9 fathoms sand and ouze, with the northernmost hill N. E. by N., and the other hill bearing about west. From Macula Bay to Shahar, soundings extend a very little way out from the coast, and none are to be got with 120 fathoms of line within 3 miles of the latter town, but the coasting vessels anchor close in shore.

Cape Bogatshua. CAPE BOGATSHUA, in lat. about 14° 6′ N., bears E. ½ N. from Shahar, distant about 16 leagues; it is a high black projecting table land, with a bay on each side, which makes it appear when seen at a considerable distance, like an island. The coast between it and Shahar is generally high, with soundings 50 or 60 fathoms, about 2 leagues off shore, decreasing gradually as the cape is approached: and although the land seems barren, several villages are seen amongst the sand hills, in coasting along between these places, the town of Sharma being one of them, situated in the bay to the west of Cape Bogatshua.

KISSEEN POINT,* in lat. 15° 19′ N. and lon. about 51° 20′ E. by lunar observations, is about 33 leagues to the N. Eastward of Cape Bogatshua. The inland part between them is high, and may be seen more than 10 leagues distance, but the coast is in many places low, and contains several towns or villages; it is also bold and safe to approach, the soundings from 30 to 40 fathoms, 2 leagues off shore. Kisseen Point is high, and may be seen 10 or 12 leagues; when it is viewed from the westward, two sharp peaks, called the Asses Ears, are discerned, which make it easily known, as they are situated near the point. When these bear N. by W. the bay begins to open, which is to the northward of the point, and has in it regular soundings, from 12 fathoms at the entrance, to 4 or 5 fathoms, sandy bottom, near the villages Kisseen, Durga, and Sharwin, in the bottom of the bay, where ships may lie sheltered from S. W., westerly, and northerly winds. The village of Kisseen is in lat. 15° 25′ N. having a well to the westward of it, near a mile from the shore; the only place where water can be procured. Geo. site of Kisseen Point.

CAPE FARTASH, in lat. 15° 34′ N., lon. 51° 56′ E., is very high, and may be seen at 26 leagues distance in clear weather, and cannot be mistaken, as it projects far out into the sea: when 10 or 12 leagues off it, in a southerly direction, it appears like an island with a gap in the middle. The coast between it and Kisseen forms a concavity, intersected by smaller bays, and it is low in several places, near the sea, but inland the country is mountainous: some villages may be seen in passing along. The soundings abreast the cape, are 40 and 50 fathoms, about 2 miles distance, and the coast to the northward of it takes a direction to the westward of north, forming an extensive and deep bay, in which there are soundings proper for anchorage. The variation off the cape in 1799, was 6° West. Geo. site of Cape Fartash.

DOFAR, OR DHOFA, (called by the natives Hammee Badgeree) in lat. 17° 3′ N., lon. 54° 10′ E. by lunar observations, bears N. E. ½ E. from Cape Fartash, distant about 52 leagues. The soundings are regular between them, and the coast which is low in some places near the sea, is safe to approach, there being no known dangers. The high land of Seger is about 20 leagues to the N. Eastward of the Cape, the land forming a deep bay between them. Ships may anchor at Dofar in moderate depths, from 7 or 8 to 10 fathoms. H. M. S. Leopard at anchor, had Cape Dofar, or the western extreme of the land, appearing like an island S. 80° W. centre of Dofar Town N. 79° W., distant 6 miles; but the proper anchorage is farther in, about 1½ or 2 miles from the shore, in 6 or 7 fathoms. Between Cape Fartash and Dofar, there is said to be a place, probably Seger, with plenty of water and cattle, but these are scarce articles at all the towns on the south coast of Arabia. At Dofar, provisions, or refreshments cannot be procured. The natives appear armed with matchlocks, and spears, and seem shy to strangers. The town is small, and the anchorage exposed to both monsoons. The variation in 1799, at this place was 5° W. Seger Mountains extend nearly to Dofar, and have deep water close to them; but the land becomes less elevated near the latter place, and the hills are partly covered with trees, which is very uncommon on the south coast of Arabia. Geo. site of Dofar, coast between it and the former Cape.

CAPE MOREBAT, in lat. 17° 0′ N., lon. 54° 32′ E., about 7 or 8 leagues E. from Dofar, forms the southern extreme of Morebat Road, which is sheltered from the easterly monsoon. In working from Dofar to Morebat, the shore is safe to approach, with regular soundings. The cape or south point of the bay is low, and may be passed within half a mile in 10 or 12 fathoms. The town, consisting of a few huts, is about 2 miles from the point, opposite to which is the best anchorage, in 8 or 9 fathoms, about a mile from the shore, with the point bearing to the southward; until the point is open, the town is not perceived. Geo. site of C. Morebat: bay and town.

* There is anchorage in the Bay to the westward of Kisseen Point.

Captain Smith, with a convoy of 17 sail of store ships, put into this place in 1781-2, remained in the road 11 days, and filled up their water. This was effected by sinking casks near the mosques; the water was brackish, but it did not injure the health of the people. Fish were plentiful; some goats, sheep, and bullocks were procured; the latter a scarce article, but fodder more so. This place ought not to be chosen by ships requiring refreshments, except in cases of real necessity; a few lean bullocks, goats, or a few fowls, are all that may reasonably be expected. The inhabitants are at first shy to strangers, and although they may afterwards appear friendly, ought not to be implicitly trusted. The navigator mentioned above, says it would be imprudent for people landing in boats to venture far from the beach, or to sleep on shore in the night. The natives generally are armed with spears.

It is high water about 9 hours at full and change of moon, and the tide rises on the beach 6 or 7 feet.

A level plain coast.

From Morebat Bay, to the distance of 8 or 10 leagues eastward, a low level plain fronts the sea, which seems to be about 2 leagues in breadth, and inland is bounded by the base of a ridge of steep cliffs or mountains. The west end of this ridge is directly over Morebat Bay, from whence it extends a great way to the eastward, along the north side of the low land, until it joins the coast near Cape Monteval. This high ridge may be seen at 20 leagues distance in clear weather, and the west part of it being near the bay, it is by some persons considered as the Peak of Morebat, and given as a leading mark for the port. Another peak, is a high isolated mount resembling a sugar loaf, standing on the low land to the S. E. of the town, and is in lat. 16° 58′ N. This mountain is also very high, and may be discerned near 20 leagues distance: there is a second sugar loaf hill, on the low land farther to the eastward, and a third at Cape Monteval.

Morebat Peak and Sugar Loaf.

Cape Monteval, Geo. site.

CAPE MONTEVAL, is very high, and forms in a double cape, the western point being 3 or 4 leagues from the other bluff, or eastern extremity. The western point is in lat. 17° 20′ N. and the pitch of the Cape in lat. 17° 26′ N. lon. 55° 20′ E., or 16 leagues E. N. E. from Cape Morebat. In this space no soundings are got with 50 fathoms line, about 2 miles from the shore, the low land, and also Cape Monteval being steep to. As the south point of Morebat Bay is approached, soundings are obtained; about 3 miles to the eastward of it, 30 fathoms half a mile off the low land, decreasing in depth to the point of the Bay. The variation off Cape Monteval in 1799, was $5\frac{1}{2}$° W.

Geo. site of the Curia Muria Islands.

THE CURIA MURIA ISLANDS, fronting the Bay of the same name, are high, situated nearly east and west from each other, distant 5 or 6 leagues from the opposite coast, may be seen 14 or 15 leagues, and are very barren islands.

Halki, the westernmost, is small, situated in lat. 17° 33′ N. lon. about 55° 40′ E. or 8 or 9 leagues to the N. E. of Cape Monteval. Sardi, is the second from the westward; Halabi, the 3d, and largest island. Deriabi, the easternmost, is distant 15 or 16 leagues from Halki. Exclusive of these 4 islands, an islet called Rodondo, is situated 2 or 3 leagues to the N. E. of Halabi. These islands are steep to seaward, no soundings until very near Halabi, 65 fathoms within $\frac{1}{2}$ a mile of its S. W. end.

The channel between the westernmost island and the main is safe, with soundings in it; the other channels betwixt the islands are also thought to be safe, but that formed by Halabi and the easternmost island Deriabi is the best, having regular soundings in it from 42 to 36 fathoms within 3 miles of Deriabi. Low points project from the N. E. parts of Halabi and Sardi, on which the sea sometimes breaks.

Currents during the easterly monsoon.

From Cape Fartash to Cape Monteval, the currents often run against the wind during the easterly monsoon, but amongst the Curia Muria Islands they are very fluctuating, and frequently set to the N. Westward, into the Bay. This may render it unpleasant when a ship is becalmed close to these islands; it seems, therefore, prudent, to pass outside of them, ex-

cept when land and sea breezes prevail near the coast, to enable her to make considerable progress against the monsoon, by keeping near the land.

On the 23d and 24th of November, 1799, Admiral Blankett's squadron, from Mocha bound to Bombay, was becalmed close to these islands, when endeavouring to pass between Halabi and Sardi, and afterward went through the eastern channel. Captain Smith, with a convoy of 17 sail, worked to the eastward inside of the islands in 1781-2, had land and sea breezes in the Bay of Curia Muria, the soundings generally regular from 34 to 27 fathoms. Land and sea breezes.

The land from Cape Monteval, along the Bay to Cape Chansely, is high, and of an even appearance.

CAPE CHANSELY, in lat. 18° 2′ N., lon. about 56° 30′ E. bears nearly N. by E. from the Island Deriabi, distant about 10 or 11 leagues, the soundings between them from 30 to 40 fathoms. The land about this Cape is white and level, like the North Foreland, destitute of any distinguishing marks; but Cape Marcia, about 5 or 6 leagues farther eastward, is a low projecting headland, from whence the coast turns sharp round to the northward, and forms an extensive bay. Between these Capes, the depths are 29 and 30 fathoms 4 or 5 miles from the shore, generally regular soundings; but farther out, with Cape Marcia N. N. W. about 4 leagues, and Cape Chansely W. ½ N., there are 20 fathoms rocky bottom. Geo. site of Cape Chansely. Cape Marcia, and the coast around.

Ships working along the coast, ought to be attentive to the lead, in standing toward the shore to the northward of Cape Marcia, and not to run too far into the bay, where there is shoal water, only 10 fathoms when the Cape bears about W. by S., and the northern extreme of the land N. W. by N.; but the lead will give sufficient warning, as the depths decrease in a regular manner.

CAPE ISOLETTE, in lat. 18° 58′ N. lon. about 57° 48′ E., is high and may be seen 16 leagues in clear weather. To the westward of it, there is some double Table Land, about 2 or 3 miles in length, and here the soundings are regular, 9 or 10 fathoms close in shore. The high part of the Cape has on its summit a remarkable rock, resembling a building when viewed at a considerable distance. When near the Cape, a low point is seen projecting out from it to the N. Eastward 5 miles distant, generally called Low Point, from which, the coast that had an easterly direction on the west side of the Cape, now turns sharp round to the northward. Geo. site of Cape Isolette, Low Point.

When a ship is 3 or 4 leagues to the northward of Low Point, the coast should not be approached, on account of many dangerous shoals extending far out, from hence to the Island Mazeira. Captain Smith, with the convoy of store-ships, in working along the coast to the northward, got on the southern part of these shoals, where they had great overfalls, and shoal water, on some of the rocky patches. On one of these, the San Carlos had 3½ and 4 fathoms rocks, with a point of land like the extremity of an Island bearing N. W. 5 leagues, Shoal cliff W. by S. about 7 leagues, and Cape Isolette S. S. W., the lat. then about 19° 28′ N. North of Low Point the coast is dangerous.

MAZEIRA ISLAND, is low and rugged, extending about 14 or 15 leagues, nearly N. N. E. and S. S. W., and having hills joined by low land, appears like 2 Islands, when seen from the eastward. The S. W. end is in lat. about 20° 0′ N., the N. E. part in lat. 20° 35′ N.* and lon. about 58° 56′ E. Geo. site of the Island Mazeira.

Ships ought to avoid the gulf between Cape Isolette and the Island Mazeira, on account of the dangers it contains, for it would be imprudent to run for the Island in the S. W. monsoon when blowing strong, or at any other time when the weather is not clear, least they The Gulf to the W. and S. W. of it dangerous.

* Some navigators make the north end of the Island in lat. 20° 48′ N.

should be set into the gulf by uncertain currents, which at times prevail. This was experienced in the Royal Admiral, Captain D. Simmons, bound from the Strait of Sunda during the S. W. monsoon, which ship passed through between the Island and the main, in August, 1772, and was nearly lost.

Passage between the Island and the main, also dangerous.

They were in lat. 20° 0′ N. by noon observation on the 16th of August, and on the 17th, in the evening, had soundings, stood to the eastward, but shoaling the water, anchored till daylight, found a current setting to the northward. In the morning, with thick weather, weighed and endeavoured to work out, with a strong S. and S. W. wind, but shoaling on each tack, anchored again. On the 18th, at 4 P. M., the weather clearing up, weighed to search for a passage between the Island Mazeira and the main, or a place of safety; steered N. N. E., N. and N. by W., in soundings 6 and 7 fathoms for some time, then shoaled gradually from 7 to 4½ fathoms; steered then N. E. E. N. E., and E., got 3 fathoms and anchored. Saw the Island Mazeira bearing from E. S. E. to S., distant 2½ or 3 leagues; the water fell 2 feet, and the ship struck. At 8. P. M. the water began to rise, making the time of high water 10h. 48m. on full and change of moon; the rise of tide 5 feet. Variation 5° 56′ W.

On the 19th, in the boat, found 4 fathoms water, N. W. by W. 1½ mile from the ship, weighed, and anchored there. On the 20th, a pilot came from the Island, who agreed to carry the ship between the island and the main: to the eastward between the island and ship, had from 4 to 3 fathoms, then deepened gradually to 4, 5, 6, and 7 fathoms; to the westward, had 4½ fathoms to the distance of 2 miles from the ship.

On the 21st, at ½ past noon, weighed, and stood S. E. by E. toward the island, in from 4 to 3 fathoms, deepening gradually to 6 fathoms; then bore away east, E. N. E. and N. E., in 6 and 5½ fathoms, till near the island, and anchored in 5 fathoms, soft sand and shells, abreast of the town, the island bearing from N. E. by E. to S. W. by S. off shore 2 miles; observed lat., 20° 32′ N., variation 5° 36′ W.

On the 26th, weighed at 2 P. M. and steered along the island from N. N. E. to N. E. in 5 to 5¾ fathoms: at 3, a large sand bank above water, which forms the channel, bore N. W.; kept it at the distance of ½ a mile, the island at 3 miles distance, and the main about 2 miles; had from 4¾ to 4½, and a cast or two of 6 fathoms. When the Island Mazeira bore from S. W. to N. E. ½ E., distant 1½ or 2 miles, anchored in 4 fathoms water, to sound round the ship, found no less than 3 fathoms. At 8, A. M. weighed and steered along the shore, N. by W. to N. E., in 5 to 7 fathoms, at times only 3½ fathoms. At 11 anchored in 4½ fathoms water, being then through the passage, the north end of the island bearing from S. ¼ W. to W. S. W. distant 3 miles; lat. observed, 20° 48′ N. The smallest depth in going through this passage, was ¼ less 3 fathoms at low water.

Admiral Blankett's squadron, saw the Island Mazeira in 1799, had very irregular soundings near it, but saw no dangers. They passed Cape Isolette on the 27th November, and reached Ras-el-had on the 1st December, having experienced a current setting to the N. Eastward 1½ mile per hour.

Description of the Island in 1694.

Many ships have got into the Gulf of Mazeira, when bound to the Persian Gulf in early times: the Nassau, bound from England to Gombroon, fell in with the Island Mazeira, on the 26th of November 1694, and had soundings from 25 to 15 fathoms, with the south extremity of it bearing E. N. E. several leagues distant. She was from this time till the 28th of December, working round on the outside of the Island against strong southerly currents, with variable winds from the eastward, and frequently obliged to lie at anchor. All round the southern part of the island, also along its eastern side, soundings were got within 4 or 5 miles of the shore, and they extend several leagues from its southern part. With the island bearing from N. by E. ½ E. to E. N. E. 2 leagues distant, had 7 fathoms soft ground on a bank, deepening inside of it to 10 and 11 fathoms, then decreasing to 3 fathoms within ½ a mile of the shore.

From the 8th to the 18th of December, she lay at anchor on the east side of the island, extremes from N. N. E. ½ E. to S. W. by S., in 30 fathoms soft ground, off shore 3 or 4 miles. Here, the long boat got some water, by digging a well on the shore, but it was rather brackish. Some sheep and goats were also purchased, and a cow for 6 dollars, from a few natives found here, who were very poor.

Captain Lloyd, of the Nassau, landed on the northern part of the island, and found 3 or 4 fathoms water, within a musket-shot of the N. E. point, but a dangerous shoal projects from the north point. About 3 leagues round to the southward of the N. W. point, a shoal was seen about 2 miles within the island, between it and the main land, forming a double channel, but there appeared no safe passage for a ship inside of the island. There seemed to be a rise of tide, nearly 3 fathoms perpendicular at this place.

Ras-el-had, and coast, from Mazeira.

RAS-EL-HAD, (corruptly Cape Rasalgat,) bears from the north end of the Island Mazeira N. N. E. ¾ E. distant 40 leagues: the coast between them is bold to approach, with regular soundings projecting out 6, 5, and 4 leagues from it, until within 10 or 12 leagues of Ras-el-had, where they do not extend so far out; and abreast of the Cape, no ground is obtained at 3 or 4 miles distance. The coast is mostly barren, moderately elevated, with several low projecting headlands, among which is Ras Rouze, about 12 leagues to the S. W. of Ras-el-had, where inland the country becomes more elevated, composed of high double mountains stretching to the N. Eastward along the coat.

The mountains over Ras-el-had, are uneven, and may be seen 20 leagues, in clear weather; but facing the sea, the coast is low and level from the Cape to the westward for a considerable distance. That part set in general for the pitch of the Cape, or easternmost point of Arabia, is low, sandy, difficult to discriminate, being of circular form, but that point which may be considered as Ras-el-had is in lat. 22° 22′ N., lon. 59° 58′ E. by chronometers from Bombay. Variation 5° 20′ West near it in 1810.

Geo. site.

Coast to the high land of Kalhat.

From Ras-el-had, the coast extends about N. W. by W. 12 or 13 leagues to the high land of Kalhat, being low near the sea, but high in the country. In this space, there are several villages, inhabited chiefly by fishermen; that nearest the Cape, called Ras-el-had Town, or Masera, situated on a creek, about 4 or 5 leagues to the N. W. of the Cape Land, is small, with some tombs or White Buildings, and several trees near it. This town is situated on a low point of land in lat. about 22° 32′ N. which has by some navigators been considered as the extremity of Ras-el-had, because from it, the coast takes a W. N. W. direction to a considerable town called Sor or Zoar, distant 4 or 5 leagues. From the Cape to this place, there are soundings near the shore, but none between it and the high land of Kalhat. At a distance, the easternmost part of this high land seems to form a Cape, but it projects very little into the sea; in clear weather, it may be discerned at 20 leagues distance.

Cape Kuriat, Devil's Gap,

RAS BADAUD, OR CAPE KURIAT, in lat. 23° 20′ N. is easily known by a deep chasm in the high land, about 2 leagues to the southward, called the DEVIL'S GAP: in January, February, and March, strong gusts of wind blow from it, which will lay a vessel on her beam ends, if not prepared against them, but they generally give sufficient warning.

When Cape Kuriat bears about S. S. W., it is nearly in one with the Devil's Gap, which is not conspicuous at this bearing, and when the Cape bears south, the gap is shut in behind it. The Devil's Gap, is in lat. 23° 14′ N., distant about 11 leagues from Muscat, being an excellent mark for knowing the land.

and the coast adjacent.

The coast to the south of Cape Kuriat, forms a bay, having several villages and soundings in many places near the shore, between it and the high land of Kalhat; particularly from the village Tiwi, which is 6 or 7 leagues to the southward, there are regular soundings to Cape Kuriat, where a ship may anchor in 14 fathoms good ground about 2 miles off shore,

and be sheltered from the North-westers by the projecting land of the Cape. In the bay south of Cape Kuriat, there is a village of the same name, and a small island near the shore. Around the Cape, regular soundings are got from 25 to 30 fathoms, 3 or 4 miles off shore; which extend 3 leagues to the westward; ships, may therefore, anchor here, when it falls calm.

Natives inhospitable to strangers.

The government of Muscat, extends to Ras-el-had, although not safe for Europeans to land at the villages near the Cape, because the inhabitants are inhospitable to strangers, and there is reason to think that the Bedouins, (or wandering Arabs of the desert,) keep some of these villages or towns in subjection. The coast abounds with excellent fish, which, with dates, are brought off by the country boats to ships passing near the villages.

The land rocky and barren near the sea.

Between Cape Kuriat and Muscat, there is a projecting point which is sometimes mistaken for the Cape, from which it bears about N. 34° W. *true bearing*, and from hence the direction of the coast is nearly the same to Muscat Point, the distance between it and the Cape being about 8 or 9 leagues. All the land in this space, is high and uneven, rocky toward the sea, of barren aspect, no soundings to be had except very close to the shore.

Geo. site of Muscat Cove.

MUSCAT, OR MASCAT COVE, in lat. 23° 38′ N. lon. 58° 41′ E. or 14° 17′ West from Bombay, by good chronometers,* is formed by high land to the southward and westward; and on the east side, by an high island, which is joined by rocks to the peninsula on which the town is situated, the entrance into the cove being from the northward.

The Island that forms the cove, is by some called Muscat Island, although it is joined with, and appears as part of the main land; but that generally called Muscat Island or Fahel, is a brown barren rock, 4 or 5 miles farther to the N. Westward, distant about 3 miles from the shore, and situated to the northward of Mutrah Point. It is called Fahel by the Arabs, having a safe channel with 10 and 12 fathoms between it and the main, but is steep to, on the outside. This Island is a good mark, for knowing the openings to Muscat Cove, and Mutrah Harbour.

Anchorage under Sudaap Point.

Along the shore about Muscat, the current generally sets with the wind, on this account, should a small ship encounter a N. Wester close to Muscat Point, and not be able to get into the harbour, she may find shelter about 2 miles to the southward, by anchoring under the point of land that forms the north side of Sudaap Cove; but this may not be always advisable in a large ship, as the anchorage is near the shore. A little to the northward of Sudaap Point, there is a rock called the Great Pyramid, with 5, 6, and 7 fathoms water between it and the shore. Close to the south point of the Island that forms Muscat Cove, there is another rock called the Little Pyramid; and close to the north point of the same Island (or Muscat Point) there is a rock or islet called Fisher's Rock. The soundings close to it and the Island, are from 7 to 9 fathoms. There is good anchorage at the entrance of the Cove in 10 fathoms, with Fisher's Rock E. N. E., and Muscat Island N. W. ½ W.

Instructions for sailing into Muscat Cove;

In approaching the entrance of Muscat Cove, there is no danger, nor any anchoring ground, till within ½ a mile of the rocks. With a southerly wind, it is difficult of access, on account of variable and sudden gusts, which then blow over the rocks, but in such case, a ship may anchor in 15 fathoms at the entrance of the cove; if farther out, she ought to make a small tack, or stand to the westward into Mutrah Harbour, where there is good anchorage, in 9 or 10 fathoms, and a supply of provisions may be obtained the same as at Muscat; or she may weigh in the morning from Mutrah with the land wind, and proceed to Muscat Cove

A northerly wind is fair for running into the cove, but it frequently blows from that direction, so as to start the anchors of ships riding there. Within, and also outside of the Cove,

* By Capt. J. A. Pope, Capt. W. Richardson, and Lieut. Eatwell, agreeing within a mile of each other.

the bottom is sand, and indifferent holding ground. It is prudent to go in, should a ship intend to remain only 24 hours, for it is dangerous to lie outside: on making the signal a pilot will come off, and the sarang (or master attendant) of the port, is allowed a remuneration for giving assistance to ships entering, or mooring in the Cove.

The entrance of Muscat Harbour, or Cove, is protected by a fort on each side, and there is another fort close to the town that commands the inside of the Cove, where the depths of water are 4 and 5 fathoms between the two western forts; it is here, ships generally moor.

Refreshments. Although the coast about Muscat seems sterile, composed of black rugged rocks of forbidding aspect, the country inland, affords abundance of fruits and vegetables of various kinds, from April to September, which may be procured in the market at moderate prices: limes may be had at all seasons, and bullocks, sheep, and fowls, are generally got at reasonable prices. Rice, dholl, and other grain, may also be purchased. The fish of Muscat are the principal support of the inhabitants, being very plentiful, and of excellent quality.

Water. It is proper to use the ship's casks in watering, otherwise, the natives will bring it off in bulk, sometimes filled into oily boats. In this case, it will soon have a disagreeable smell, although very good if taken clear from the reservoir, which is near the sea, the water being conducted to it from a considerable distance inland.

In the S. W. monsoon, the current sets strong to the westward in the channel within Muscat Island, and from thence along the shore to Burka.

Coast from Muscat to Burka. BURKA, in lat. 23° 41½′ N., where the Imaum of Muscat resides in summer, is well fortified, and may be known by a number of trees. Ships may anchor at this place in 5, 6, or 7 fathoms, about 2 or 3 miles off shore. It bears from Muscat Cove about W. ½ N., distant 14 leagues; the coast along this space is clear, with regular soundings, having a town called Swardy, situated 6 or 7 leagues to the westward of Muscat. To the northward of this town, 2½ or 3 leagues off shore, in lat. 23° 47′ N., there is a large rock, surrounded by small ones, which is called Damisetto Rock, and bears from Muscat Cove about W. N. W., distant 6 or 7 leagues. The two groups of Swardy Islands lie to the westward of Damisetto Rock, distant from Muscat about 8 or 9 leagues, extending nearly east and west, between which groups a vessel may pass in soundings from 9 to 16 fathoms; and the channel between them and the shore is also safe, with regular soundings 6 to 17 fathoms. The westernmost group, which is close to a low sandy point 6 miles to the west of Burka, and called Burka Isles, have no channel for ships between them and the point, but the passage between them and the westernmost of the Swardy Isles is safe, with soundings of 12 to 17 fathoms. There are 6 or 7 islands in each group, and one of the Burka Isles is flat, with a rock on it like a turret. As the ground is loose in Burka Road, ships should anchor well out, not under 7 or 8 fathoms, that they may be able to clear the shore under sail, if they happen to part their cables.

Swardy Town; Damisetto Rock, Swardy Islands.

The Minerva at anchor in 7 fathoms loose sandy bottom, had Burka Town bearing south 3 miles; Burka Islands W. N. W. ½ N. 5 miles, islands in the offing from N. E. by N. to E. N. E. ½ N. off the nearest about 3 leagues, extremes of the low land, being a continued grove of date trees from W. by N. to E. by S. Latitude observed 23° 43′ N. lon. 57° 54½′ E. by lunar observations.

Coast from Burka to Hossein. About 8 leagues to the W. N. W. of Burka there is a village on a projecting part of the coast, from whence the town of Souiak is distant about 8 leagues farther to the N. Westward. Sohar Town, 22 leagues N. W. by W. from Burka, is in lat. 24° 21′ N.; and 8 or 9 leagues farther to the N. N. W. the town of Schenas is situated in lat. 24° 45′ N. The anchorage at Sohar is in 6 fathoms mud, with the Fort S. W. ½ S., and a small peaked hill W. by S. ½ S. off shore 2 miles. Here, H. M. S. Chiffonne anchored; and at Schenas she

anchored in 3½ fathoms about 700 yards from the shore, to cover the landing of the troops in the expedition against the Pirates of the Persian Gulf in 1810.

At the distance of 2 or 3 leagues N. W. from this town, a bay is formed near a place called Hossefin, where the direction of the coast changes from N. W. to N. N. Eastward. From Burka to the bay now mentioned, the direction of this part of the coast called Oman, is generally about N. W.; the distance 35 to 37 leagues, having in most parts regular soundings close to the shore, without any dangers, except some islets or rocks, said to lie in lat. 24° 28′ N. to the eastward of Sohar, at a considerable distance from the land.

From thence to Point Deba,

From the bay at Hossefin the distance is about 8 leagues N. N. Eastward to the projecting land of Kurfaken, on the N. W. side of which lies the Cove of Kurfaken, in lat. 25° 20′ N. only fit for small vessels. Point Deba, in lat. 25° 34′ N., is distant 5 leagues to the northward of Kurfaken. Along this part of the coast from Burka, there are several villages, and many date trees, with soundings extending a great way from the shore.

and to Cape Mussendom.

Ras Fillam in lat. 26° 0′ N. is distant from Deba Point, about 8 or 9 leagues, North and N. by E.; the land is high between them, and Deba Bay is formed on the north side of the point. On this part of the coast, and from hence to Cape Mussendom, the soundings are deep, from 40 to 60 fathoms, within 2 or 3 miles of the shore.

Fillam Rock.

Fillam Rock, or Islet, is in lat. about 26° 10′ N. distant 3 or 4 miles from the shore, having 50 fathoms water between it and the shore, agreeably to the survey of Lieutenant W. Robinson: inside of it, the Europa had 52 fathoms.

Near Cape Mussendom, betwixt it and Fillam Rock, there are some bays, in one of which Lieut. Maughan of the Bombay Marine, found good anchorage, sheltered from most winds, and here he got a supply of fresh water.

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## *DIRECTIONS for SAILING from INDIA to MUSCAT, and to the ENTRANCE of the PERSIAN GULF.*

Best time to sail for the Persian Gulf.

THE MONTHS most favorable for sailing from the Malabar Coast to Muscat, or the Gulf of Persia, are November, December, January and February. In these months, ships from the Bay of Bengal, Ceylon, or the southern ports on the Coast of Malabar, should proceed with the land and sea breezes along that coast as far as the high land of St. John, in lat. 20° N., which may be sometimes done in 10 days. They should then depart from the land, keeping to the N. West as much as the wind will permit, on purpose to pass near the

Directions.

Guzarat, and Guadel coasts; when abreast of Dui Head, 35 fathoms will be 5 or 6 leagues from the land. Having passed this headland, it will be prudent to continue to keep well to the northward, and increase the lat. to 23° 50′ or 24° N. before they are 11° to the westward of Bombay, if the wind permit; for even in those months, it often hangs far to the northward. With the Gulf of Cutch open, it sometimes blows strong at E. and E. S. E. accompanied by dark cloudy weather. When the wind is northerly, the sky is clear and serene; when N. E., beware of sudden squalls, indicated only by the rapid motion of a small cloud that accompanies them, and gives very little warning.

By running down the westing in lat. 24° N., a brisk wind will be experienced, probably until the middle of the Persian Gulf is open, which often sends out a strong northwester. If bound up the gulf, a ship must keep nearest the Persian Coast, but may bear away for Muscat, when bound to that port, which she will reach with the north-west wind without

difficulty, by crossing over to the windward of that place. The usual passage from Bombay in these months, is 10 or 12 days.

Calms near Ras-el-had.

Ships proceeding on a direct course from Bombay to Muscat in this season, by meeting the winds well to the northward, frequently make the land about Ras-el-had, and if they get near the shore, are liable to calms. Some ships have been 15 days working from the high land of Kalhat to Muscat, against strong northwesters and a lee current in the offing, and calms near the shore. In these months, the land should not be approached nearer than 5 or 6 leagues, to avoid calms near the shore.

Instructions for sailing to the Persian Gulf late in the season.

In March, April, and May, a direct course to Muscat is to be preferred, from any part of the Malabar Coast; as the land breezes are no longer to be expected, it is tedious getting to the northward; a ship should, therefore, stand off from the land into the open sea, if to the northward of the Laccadiva Islands, or through any of the most safe and convenient channels between them, if departing from one of the southern ports on the coast. When well out from the land, the sea will be found more smooth than along the coast, and the winds variable, between N. and W. N. W., but generally N. by W. to N. W. With these winds, she ought to stand to the westward when they are favorable, and to the northward when they draw well to the N. W. or W. N. W., endeavouring to make a direct course toward Ras-el-had, in March, and the early part of April. In the latter part of this month, and in May, it is prudent to get to the westward as speedily as possible, to benefit by westerly and S. W. winds, which may certainly be expected, when the gulf leading to the Red Sea is open, or on approaching the Arabian coast; she ought then to steer to fall in with the land to the southward of Ras-el-had, for about this cape, the S. W. and southerly winds begin in March, or early in April, but blow stronger in May. Inside of Ras-el-had, land and sea breezes prevail in this season, except when they are obstructed by a strong north-wester from the Persian Gulf, which is certain once or twice a month. The coast may be approached in these months within 5 or 6 miles, and 20 days are then reckoned a good passage from Bombay to Muscat.

Winds near Ras-el-had at this time.

Winds in September and October.

In September and October, the passage is very tedious; being the change of the monsoons, the winds are variable between the coasts of Arabia and Malabar, but blow mostly from N. Westward; particularly near Bombay, and to the distance of 2 or 3 degrees from the land, these N. Westers prevail, with a ground swell at times. A ship in the latter part of September, or October, ought to work up the coast to 19° or 20° north latitude, then stand off, making all the westing possible, as the wind is found to vary; observing if circumstances admit, not to go to the southward of lat. 19° N., in crossing over toward the Persian Gulf; and endeavour, if bound to Muscat, to make the land about Ras-el-had, where she will meet with variable winds on this part of the Arabian coast. Should a ship at this season, intend to proceed up the Persian Gulf direct, it will be prudent to keep well to the northward along the coast of Persia, to Cape Jask, and avoid the Arabian shore.

How to proceed in these months.

Southern passage.

THE SOUTHERN PASSAGE, from Bombay to Muscat and the Gulf of Persia, is often made by the Company's marine vessels, and also by merchant ships. It is a track of near 1500 leagues which they are obliged to follow, to gain about 260 leagues, the distance from Bombay to Ras-el-had. June, July, and August, are the months in which ships leaving Bombay, must adopt this passage, when bound to Muscat, or the Persian Gulf, and likewise when their destination is the Red Sea. After working out of Bombay Harbour, and obtaining an offing of 20 or 25 fathoms water, a ship in proceeding to the southward along the coast, should keep in soundings from 35 to 60 fathoms, taking care not to come under 20 or 25 fathoms toward the land, nor to deepen off the bank, particularly when passing inside of the Laccadiva Islands.

In passing down the coast, strong S. W. and W. S. W. winds, and squalls at W. and W. N. W. may be expected in these months, with frequent hard gusts, and heavy showers of rain.

By the time she has reached lat. 4° S. it is probable she will be nearly on the meridian of the south end of Ceylon, and may fall in with the S. E. trade wind in June, or July, but in August it draws farther southward. In these months, many ships run down their westing in 4° to 4° 30′ S., between the southern part of the Maldiva Islands and the Speaker's Bank, for in June, and July, the S. E. trade is sometimes experienced in this track, which is generally called the Short Route; but in August, the other track to the southward of Diego Garcia is preferable, by keeping in 9° or 10° south latitude. This track is more certain than the other at all times, as the wind is more steady, and generally much stronger than nearer the equator. It, however, has frequently happened, that ships proceeding by the Short Route in June, July, and early in August, have experienced smooth water, and steady S. E. and E. S. E. winds; to run down the westing in 4° and 4½° south lat.; but in May, or late in August, it is not prudent to adopt this route; for then, the winds are liable to change to the westward, producing a current to the eastward. In the southern track, the current generally sets to the westward all the year round, when the trade wind prevails; and this passage to the southward of the Chagos Archipelago, seems preferable to the Short Route, and more certain at all times, for ships following the southern passage from the eastern parts of India, to Bombay, the Persian Gulf, or Red Sea; or from Bombay to these places.

The Short Route.

When it may be followed,

southern track preferable.

Cautions to be observed.

The navigator should be careful to run sufficiently to the westward, whilst in south latitude. If bound to the Red Sea, it will be prudent to pass near the Seychelle Islands; if to Muscat or the Gulf of Persia, it is advisable to run 1° or 2° to the westward of Ras-el-had, before a ship leaves the S. E. trade; for the winds during the S. W. monsoon, from the equator to the Arabian Coast, generally blow very strong at W. S. W. to W. N. W. with a constant current setting to the eastward. It is, therefore, frequently impossible to make any westing after a ship has crossed the equator, or even to make a north course good; the heavy sea on the beam tends likewise to force her to leeward, sufficient westing should be therefore obtained in south latitude, to enable her to reach Ras-el-had with a west wind, which is the best place to make the land, or a little to the southward of that headland. Care should be taken, not to approach the dangerous gulf to the S. W. of Mazeira Island, but when past this island, a ship may haul in as much as the wind permits, and make the land. On making the land about Ras-el-had, the S. W. wind that blows fresh to the southward of the cape during the S. W. monsoon, veers gradually to S. E. in passing that headland. When it is brought to bear south, the S. W. monsoon is entirely lost, and light variable winds may be expected from thence to Muscat. Fresh south-easters happen once or twice a month, inside the cape, which continue 2 or 3 days, and sometimes blow up into the gulf, but N. W. winds generally prevail.

Where to make the land.

## *COASTS of SCINDY and PERSIA, with SAILING DIRECTIONS.*

### 1st. COAST OF SCINDY, FROM THE GULF OF CUTCH TO CAPE MONZE.

Coast of Scindy.

COAST OF SCIND, OR SCINDY, extends from the bay (or gulf) of Cutch, nearly 80 leagues about N. W. by W. to Cape Monze, where the Persian Coast is considered to begin. It receives this name from the river Scind, or Indus, which disembogues itself into the sea, by many branches extending along this coast. The natives have been addicted to rapine during a considerable period, and are generally hostile to strangers; this coast is there-

fore, seldom visited by European ships, consequently its geographical delineation is not very correctly ascertained.

GULF OF CUTCH, extends inland to the eastward, having the coast of Guzarat to the S. and S. E. and the coast of Scindy to the northward. Several rivers fall into this gulf, and it contains many islands and banks, particularly in the southern and eastern parts; the soundings at the entrance are 16 and 20 fathoms, decreasing toward either shore. On the north shore, nearly in lat. 23° N. there are several hills, called Chigo, and Assar Hills, and a town near them, opposite to which there is anchorage in 6 or 8 fathoms, in Muddi Road. A little to the westward of this anchorage, there is a rocky bank extending out from Assar Pagoda, and further west, 2 or 3 forts, with regular soundings along the shore. Gulf of Cutch, its northern coast.

From Chigo Hills, the direction of the coast is about W. N. W. and N. W. by W. 26 or 28 leagues, to the easternmost branches of the river Scind, having regular soundings stretching along it, and extending a great way out from the shore. The easternmost branches of this great river, are by some called Warrell, Mull, and Aurangabunder Rivers; the last mentioned is also called Darah, and has a wide entrance, abreast of which ships may anchor, but shoal water is found on the bank near the mouths of these rivers. From hence the coast is composed of many islands, formed by numerous rivers diverging from the Scind, and falling into the sea at considerable distances from each other, the largest of which is the westernmost, or Lahry Bunder Branch, of Scindy River. Coast of Scindy, from the Gulf of Cutch.

This grand branch of the River Scind, is said to be 4 or 5 leagues wide at the entrance, in lat. 24° 8′ N. lon. about 67° 20′ E.; with depths of 12 or 13 fathoms water. Lahry Bunder, in lat. 24° 30′ N., is about 11 leagues E. N. E. ward from the north point of the entrance, where the river is 4 miles wide, with 10 or 11 fathoms water. Tattah, is in lat. 24° 44′ N., lon. 68° 17′ E. by the observations of Capt. Maxfield, of the Bombay Marine in 1810, and this ancient town is about 20 leagues N. Eastward from the entrance of the river, which is there 1800 yards wide, and 4 fathoms deep in the dry season. This account is mostly taken from the description of Lieut. Pottinger, who was at Tattah, and on this coast in 1809-10, and he says the river is deep, without a bar; but other accounts place a bar, with 15 feet water on it below Lahry Bunder. The ebb tide runs very strong in the freshes, out of the mouth of the river. Geo. site of places in the River Scind.

The coast of Scindy is generally low, covered with shrubs, and not visible farther than 5 or 6 miles; it continues so, without any thing remarkable, till within 3 or 4 miles of Lahry-bunder river, and then terminates in sand, the extreme point only excepted, on which are several tufts of bushes; and at times, bamboes with white flags on them, may be seen before the land. The soundings along the coast are regular, and the bottom mud: the tide was found to set W. N. W. and E. S. E. 5 fathoms per hour. At anchor in 7 fathoms, in Larre-bunder Road, the rock to the eastward of the river bore N. by E., the tomb or pagoda N. by W., and Cape Monze N. W. by W. To Lahry-bunder;

From the mouth of Lahry-bunder River, the high land over Crotchey is discernible; the coast between them is low, interspersed with shrubs, without any thing remarkable; but inland, there are several hummocks of moderate height. and from thence to Crotchey.

KORAUCHEE, OR CROTCHEY entrance, in lat. 24° 46′ N. is easily known by several islets, and a white tomb or pagoda, built on the promontory which bounds the west side of the harbour, and at a distance appears like an island. The bar, on which there are about 1 and 1¼ fathom at low water, and 18 or 19 feet at high water, spring tides, extends across the entrance from the promontory to the islets, which is the proper channel; but in case of necessity, a small vessel may pass, or anchor between any of the islets, where the Description of Crotchey Harbour, the Town, and circumjacent coast.

* Bunder is the name used in the western parts of India, and also by the Arabs, for a harbour, or trading port.

bottom is sandy, as it is all over the bay or harbour. To anchor in the road outside, the tomb at the entrance should be brought to bear about N. W. by N., to avoid the foul ground. There is a heavy swell on the bar in the S. W. monsoon, rendering it dangerous in this season.

The town of Crotchey is 5 or 6 miles from the anchorage, and about a mile from the side of a small creek, which can only admit small boats. At this place, a considerable trade was formerly carried on; the exports, cotton, almonds, raisins, dates, ghee, oil, and hides, and some piece goods; in return, sugar, rice, pepper, &c. used to be imported. Cattle and goats may be procured, but at higher prices than at Scindy.

The water is very indifferent, and charged high, it being brought from a considerable distance. At this place, the inhabitants were formerly very civil to strangers, but it is not at present frequented by Europeans.

About a mile inside the bar, there is an extensive bank, dry at low water, between which and the western shore, is the channel up the bay or harbour, and the general depths in the fair track along that side of the bay, are from 2 to 4 fathoms at low water. The tide flows to 11¼ hours on full and change of the moon.

The land about Crotchey, has a white appearance, and is of considerable height in the country, extending in a chain of hills toward Cape Monze, which bears from the entrance of the harbour, about W. by N., distant 5 leagues; but the land between them, which fronts the sea, is very low, and not seen except when near the shore.

## 2d COAST OF PERSIA FROM CAPE MONZE TO CAPE JASK.*

Geo. site of Cape Monze.

CAPE MONZE, OR CAPE MOWAREE, in lat. 24° 51′ N. and lon. 66° 50′ E. (by the best approximation that can be made, there being no recent observations obtained on that coast) is of moderate height, having a bank near it on the south side, where the depths are thought to be 4, 5, and 6 fathoms rocky ground. Between it and the Cape, there is said to be a safe channel of 6 or 7 fathoms, and the same depths inside the Island Chilney or Churna, which is of a whitish colour, situated about 3 miles to the westward of the Cape.†

From Cape Monze to Sonmeany River, the distance is about 10 leagues, and the direction of the coast nearly north, forming a small degree of concavity, and, as in all other parts, it is extremely low close to the sea, and high inland, with very irregular soundings, chiefly mud. On this part of the coast, there is a great quantity of timber, driven on shore in the S. W. monsoon, and there appears to be at all times a heavy surf, which would make it difficult to bring away any of the timber.

Near the shore, about 3 leagues to the northward of Cape Monze, there is a large flat rock several feet above water, having 3 and 4 fathoms close to it all round; and a ship may, in working along shore, venture to stand well in, keeping the lead going, until Sonmeany is approached, at which place shoal water lines the coast, extending out a considerable distance, and in some parts it is dry at low water.

Sonmeany.

SONMEANY, is a small town situated on the southern bank of Poorally River, a little inside the entrance, with an old ruined mud fort: the huts composing the town are con-

* Principally from the survey of Lieutenant Porter.

† The channel between Chilney Island and Cape Monze is about ½ mile wide, and safe.—Sonmeany Bay, is formed by the projection of Cape Monze to the S. Eastward, and was called by Nearchus, the Port of Alexander, where he remained some time at anchor with his fleet.

structed of mats and poles, which is scarcely seen from the road, but in clear weather it may be easily known, by a remarkable gap in the high land, which cannot escape notice. When this bears N. N. E. ½ E. the river's mouth will bear N. E. by E., distant about 2 miles, in ½ less 4 fathoms at anchor in the road. There are 2 fathoms on the bar at low water, with 6 or 7 fathoms within it, where the boats lie.

Every article of refreshment is here very scarce, even the water, which is indifferent, cannot be procured in sufficient quantity, nor without considerable trouble. It is got by digging holes 3 or 4 feet deep, a little above high water mark, and should be drawn off immediately. If the water oozes through the sand, which does not always happen, it will serve that day, and perhaps the next, but soon becomes quite brackish.

Coast from it to the westward.

From Sonmeany River, the coast takes a direction nearly west, about 30 leagues to Cape Arubah, having several villages in the intermediate space. The coast is low near the sea to the westward of the former place, but high and craggy inland, and continues so to Cudjerah, which is about 14 leagues from Sonmeany River. To the eastward of Cudjerah, there is a place called Arrah; between them, in a kind of valley, a lump of high white land is situated, which is a good mark for this part of the coast.

Cudjerah Point.

CUDJERAH, at a considerable distance, seems a low point, but it terminates in a bluff: when 5 or 6 miles to the westward of it, the rocks of Hinglah are seen, which appear, unless very close in, to be separated from the coast; but they are situated on the edge of a low sandy point. The shore all along is bold, and safe to approach, the bank extending about 4 leagues off, from whence it shelves suddenly from 25 or 30 fathoms, to no ground.

In coasting to the westward from Hinglah, another point called Muran is discerned.

Geo. site of Cape Arubah.

CAPE ARUBAH, in lat. 25° 7′ N. lon. about 65° 24′ E., may be seen from Muran Point, appearing like an Island,* it being a peninsula projecting far out into the sea, forming a bay on each side. That on the east side is safe, having regular depths of 6 and 7 fathoms, decreasing to 3 and 4 fathoms near the shore, with a rivulet called Jerkamutty a little to the eastward. The bay on the west side is small, and the water so shoal, that no shelter is afforded to vessels. The land about it is very remarkable, and for 7 or 8 miles to the westward, craggy and uneven.

Ashtola Island, and adjacent coast.

ASHTOLA ISLAND, OR SUNGADEEP, bears about west from Cape Arubah 10 or 12 leagues: it is 2 or 3 miles long, of moderate height, and even appearance, having on the south side, a rock resembling a sail when seen at a distance, but on a near approach, it has some similarity to a camel lying down.

On the north side of the Island, there are 2 or 3 sandy bays, frequented by great quantities of turtle; foul ground, with overfalls from 5 to 15 fathoms, projects from it to the distance of 3 or 4 leagues on the south side: between it and the main, the channel is safe, about 2 leagues broad, with regular soundings from 5 to 9 fathoms. To the N. E. of the Island, there is a river on the main, but it will not admit a small boat, the bar at the entrance being very shoal. The coast hereabout is craggy and uneven, without any thing remarkable.

Cape Pacence and village.

CAPE PACENCE, OR PASSENCE, situated 4 or 5 leagues to the westward of Ashtola Island, appears like a barn in coming from the eastward, and forms a bay on this side, where a village of the same name as the Cape is situated, chiefly inhabited by fishermen. Water is procured here in the same manner as at Sonmeany, and a few lean goats may be obtained at a high price.

* It is called also Cape Arabah, or Urboo.

Coast from it to the westward.

After passing Cape Pacence, the bluff point of Sheid is seen, which forms the western extreme, and appears like an Island, the high land of Duram at the same time shewing like another island. Between these two headlands, the coast is so low, that it seems like a deep bay until closely approached. Muddy Peak, which forms one of the extremes of Guadel Bay, is very high, of a white colour, and may be seen at a great distance; it is an excellent mark for this part of the coast, being a very conspicuous piece of land: the soundings are regular all along the shore.

Geo. site of Cape Guadel, the town, and contiguous coast.

CAPE GWADUR, OR GUADEL, in lat. about 25° 4′ N. lon. 63° 12′ E., is a peninsula of moderate height, joined to the main by a neck of land not ½ a mile over. A wall fortified with towers, formerly extended across the isthmus from one bay to the other, to protect the town from assaults by land; the ruins of which, also some wells, and a town built with stone are to be seen, but the few inhabitants now live in a town composed of mat-houses, situated close under the north side of the Cape.

Water is got here, in the same manner as at Pacence and Sonmeany, that procured from the built wells being brackish; and a few goats, sheep, and fowls, may be purchased. The natives are mostly employed in manufacturing dark narrow checks, and some plain carpets of various colours.

Gaudel Bay, is sheltered from S. W., W. and Northerly winds; the bottom is chiefly sand, and no danger, although from 10 or 12 fathoms at the entrance, the decrease is rather irregular in standing into the bay, where the water is generally shoal, from 3 to 4, or 5 fathoms.

From Crotchey to this place, the people call themselves Belooches,* and from hence to Cape Jask they take the name of Brahooes, although their manners and dress appear similar, but in language they seem to differ a little.

Currents.

Off Cape Guadel, the current in January was found to set eastward. On the west side of the Cape there is a small bay, which affords very little shelter, from whence to Vouch Bay, the coast is of moderate height, but inland extremely rugged and remarkable. The shore is bold and safe to approach, the soundings being regular, and the bottom mud. Vouch Bay is 3 or 4 leagues from the west part of Cape Guadel, the land between them forming a great concavity.

Noa Point.

NOA POINT, the eastern extreme of Gutter Bay, is 8 leagues from Vouch Bay; the coast between them is moderately high, with regular soundings in general, except in one part, the bottom is rocky with overfalls.

Gutter Bay.

GUTTER BAY, is about 3 leagues deep and 7 leagues wide at the entrance, the depths in it generally shoal, from 4 to 6 fathoms. When abreast of Noa Point, the land on the west side of the bay is not discernible, except a hummock or two, which appear like islands. The land at the bottom of the bay, where there is a small town inhabited by fishermen, being very low and covered with shrubs, is not seen till within a few miles of it, and then the bushes first appear.

In crossing the bay from Noa Point, a small lump or hill, situated on the high land, is seen on the opposite shore, nearly under which is an island, that cannot be distinguished till it is approached close. This island lies at the mouth of a small bay, called by the natives Bucker Bunder,† where they go to fish. When round the west point of the bay, some very

* Or natives of the Province of Beloochistan.

† This is said to be one of the places where the pirate vessels from Guzarat lie in the fair weather season, on purpose to plunder the Dingies, or other small vessels, which trade on this coast. These Pirate Gallivats come from Bate, Nova-Bunder, Jaffrabat, and other ports on the Guzarat Coast. They rove along the coasts of Scindy

craggy land will be perceived, and to the westward of it a remarkable hill, of round form; from whence to Churbar a vessel should keep near the shore, that she may be enabled to anchor, when it falls calm, between the land and sea breezes, to prevent being driven to the eastward by the current. On this part of the coast, the bank of soundings extends only a little way out, but the depths are regular in keeping along shore, and the bottom mostly sand or ouze. The current in January was found to set 2 knots per hour to the eastward, but much stronger out, than in shore. From the hills last mentioned, the land is of moderate height several leagues, the coast having a direction about W. and W. by N.

CHURBAR, OR CHEWABAD BAY, in lat. about 25° 15′ N. lon. about 61° 20′ E.* one of the best on this coast, is situated about 14 leagues to the westward of Gutter Bay. The entrance is between the headland called Colab, or Rigum Point, which is on the west side, and Churbar low point to the eastward; this is very low, and over it, a white tomb and some trees are perceived, sooner than the town of Churbar. A spit of rocks projects from the low point, which must have a birth, but the high point of Colab may be passed close when entering the bay, it being steep to. Churbar Town, composed of straggling mat-houses, is inside the low point, where ships may anchor in 4 or 5 fathoms: here, the water is good, and easily procured, being near the shore; goats and sheep may be obtained, but neither bullocks nor poultry are to be had. Some small gardens, produce turnips, onions, potatoes, carrots, brinjalls, &c. They have very fine horses, and a few camels. This town, although very indifferent, is the best on the coast, where are settled several Banians, and the inhabitants like those of Guadel, are mostly weavers. Farther up the bay, there are the remains of the town of Téiz, or Tearsa, where the Portuguese had formerly a settlement. From this place, around the bottom of the bay to Colab, (the headland at the entrance) the land is very low and covered with shrubs, but the country hereabout is generally dry, barren, and unfruitful, seldom having the benefit of rain: famines, therefore, are liable to happen, which force the inhabitants in great numbers to desert the country. Churbar Bay, and town.

The small bay where the town of Churbar is situated, has regular soundings, the bottom sand. The depths decrease quickly but regular, in standing up the great bay to the north-west, where there is good shelter under Colab headland, from westerly winds, which sometimes blow very strong. The tides rise about 10 feet on the springs: high water about 6 hours, on full and change of moon.

GODEIM, 4 or 5 leagues to the westward of Colab, is the western extreme, visible from the latter place, and forms the S. W. side of Possem Bay. It appears, when first seen, like an island, being a headland, level at the top, with steep cliffs toward the sea, and the land contiguous very low. The coast from Colab is of moderate height, till it terminates in a remarkable bluff, which is the eastern extreme of Possem Bay, in which the depths decrease from 5 or 6 fathoms at the entrance, quickly to 2 and 3 fathoms inside. At the mouth of this bay, there is a Sunken Rock nearly even with the water, having 7 fathoms close to it all round, and a small rocky spit projects from Godeim Point to the southward. The land round Possem Bay is very low, but inland there are some craggy hills of considerable height. Coast to the westward. Possem Bay.

and Persia, and about the entrance of the Persian Gulf, boarding and plundering every small vessel they can master. Recently they have been successful in getting possession of several brigs, trading from Bombay to the Persian Gulf, and treated with great cruelty, the commanders and officers of those vessels.

* But Captain C. Sealy, in 1809, made Churbar town in lat. 25° 17′ N. and only in lon. 60° 45′ E. by chronometer from Muscat. Indeed, the whole of the coast from hence to the Gulf of Cutch, seems by a *few* observations lately obtained in different places, to have been hitherto laid down too much easterly; but a greater number of observations are still necessary, to determine exactly the longitude of different places on this coast.

Tanka River. From Godeim the coast extends 5 or 6 leagues about W. by N. to Tanka River, which is small, having about 2 fathoms water at the entrance, but the soundings are very irregular, and mostly hard sand. About 3 miles up, there is said to be ruins of a Portuguese Fort, with some wells.

To the westward of this river, the land of Killock, or Coelat is situated, which is a remarkable headland. From hence to Cape Mucksa, the coast extends nearly W. by N. about 30 leagues, having some projecting headlands, and several bays; the land is generally of moderate height, but nothing remarkable, except that it seems not so sterile as the parts already described, the valleys in many places being full of date trees. The soundings along the whole of the coast from Churbar to Mucksa, are regular near the shore, but a little to the eastward of this Cape, and in some other parts, the bank extends only a few miles from the land. Cape Mucksa is a low point of land, having a sharp peaked hill to the eastward, and behind it in the country, high irregular mountains. On both sides of this Cape, the coast forms open bays; but the westernmost, affords better shelter from N. Westers than Jask Bay.

Cape Mucksa

Geo. site of Cape Jask. CAPE JASK, OR JAQUES, in lat. 25° 38′ N., lon. 58° 10′ E. by chronometers from Bombay, is the headland that bounds the entrance to the gulf of Persia, on the eastern side, and is distant from Cape Mucksa 8 or 9 leagues, bearing nearly W. by N. The coast between them is high and uneven, and inland there is a mountain that may be seen 20 leagues, which by some navigators is called Choues Mountain. Cape Jask is a low sandy point, with a small mount* on it, like a fort, which cannot be perceived until closely approached. Within 3 miles of the low point of Cape Jask, the depths are 16 and 17 fathoms, and 3 leagues off, from 50 to 60 fathoms, from whence the bank shelves off very abruptly to 100 fathoms no ground.

Jask Bay. JASK BAY, OR ROAD, is formed on the north side of the Cape, having regular soundings in it all over, except near the shore on the eastern side. Here the water is shoal, from the Cape point to the mouth of a small river, or creek, that lies 3 or 4 miles to the northward, which is almost shut up with banks; but there is said to be a channel between them over a bar, where the depth is 4 or 5 feet at low water, and 3 or 4 fathoms inside the river. It is high water at 6 hours, on full and change of moon, the rise of tide 6 or 7 feet. Variation 3° 30′ W. in 1810. The bottom is soft, and the depths decrease gradually to 5 fathoms in the middle of the bay, where a ship may lie sheltered from northerly or easterly winds, with the Cape point bearing about S. S. E., distant 2½ or 3 miles.

A good birth, is in 4½ or 5 fathoms mud, with the peak of Quoin Hill bearing N. 12° W., Cape Jask S. 22° E., and the trees at the watering place S. 57° E.

A sandy spit or shoal, projects out from Jask point to the westward, on which the depths gradually decrease, without danger, upon a bottom of sand, although formerly this spit was considered to be dangerous, and the Cape on this account was seldom closely approached. Until the late surveys of Jask Bay by Capt. Jacks, of the Bombay Marine, and Capt. Sealy of the Artillery, it was very imperfectly known, in some charts the Cape Point being represented as the south-east extreme of the Bay, and in others the N. W. extreme was marked as Cape Jask, from whence the coast was made to take a N. by W. direction into the gulf; whereas, it really extends in a W. N. W. direction from that Cape to Cape Kerazee, about 9 leagues, before it turns round to the northward.

Fresh water. A little to the south of the creek, fresh water is got from the wells, by digging in the sand 6 or 8 feet deep, close to 3 trees. The Mornington and Ariel, Bombay cruizers, filled up their water here in November, 1809, and procured some goats from the fishermen, who reside at this place.

* The ruins of a Mosque

LIBRARY OF THE BOMBAY BRANCH OF THE ASIATIC

# GULF of PERSIA:—WINDS and CURRENTS.

## DIRECTIONS FOR SAILING TO BASRA:—COASTS, ISLANDS, HARBOURS, &c.

IN THE GULF OF PERSIA, northwest winds prevail all the year, November, December, and January, being the only months when southerly winds are certain; particularly in the elbow of the gulf, between Kohumbarek Rock and Gambroon, hard gales of short duration from S. S. W. and S. W. are sometimes experienced, making that part of the coast a lee shore. Should a ship be near the Island Larek, and meet with a stroug S. W. gale, it will be prudent to anchor under it, or the Island Ormus, until the gale abates. Excepting the months just mentioned, at all other times, southerly winds happen only by chance, and when they blow fresh 2 or 3 days, the northwester returns with great violence. Even in those months, ships running with a brisk southerly wind, have been suddenly taken aback with a strong northwester, which brought them under a low sail, and rendered it necessary to look for shelter under lee of the nearest Island. According to the duration and strength of the southerly wind preceding a northwester, the latter may be expected to double it in force, and in time. It is useless to attempt to work against these strong northwesters, which seldom exceed 5 days, but more frequently 2 or 3 days; when they abate, either southerly, or light land winds follow. Prevailing winds, are north-westers.

The northerly wind is called by the Arabs, Baw* Shaumaul; it blows once a year about 40 days without intermission, happening in June and July, and is called the Great Shaumaul. It is needless for a ship to attempt to work up the gulf during this time, though some vessels have been known to turn up Basra River under their courses, while these winds were blowing. Shaumaul's.

There is likewise a smaller Shaumaul, which blows in March and April, sometimes 20 days, without varying in strength or direction; but 4 or 5 days after this wind sets in, the current begins to run strong against it, so that a vessel may gain 20 miles a day, turning to windward under close reefed topsails and courses.

The north-wester and south-easter, are the only winds which blow steady in this gulf, and in every turn of it, are directly up or down; the other winds when light, are variable and uncertain.

During the winter months, southerly winds are often accompanied by some squalls and rain, but being resisted by the north-westers, they seldom reach Basra, for there is very little rain at that place. In these months, the high lands to the northward of Busheer are all covered with snow, and ice may be procured at the last mentioned town 6 months in the year. Squally weather in the winter months.

THE CURRENTS outside the entrance of the Persian Gulf, between Muscat and Cape Jask, are variable and uncertain, liable to change with the wind, (particularly with a north-wester) and set to leeward; at other times, they run in direct opposition to N. W. and Northerly winds, producing a high chopping sea, and are generally much stronger near the shore, than at a distance from the land. At the entrance of the gulf, it has been observed, that the prevailing currents run in, from May to September, and out of the gulf during the rest of the year. Currents.

* Baw literally wind.

From October to March, a ship bound either into, or out of the gulf, ought to keep along the Persian Coast to, or from Cape Jask; but from March to September, the mid-channel track, or that rather nearest the Arabian Coast is preferable.

Sailing directions.

Within the Gulf of Persia, from Cape Mussendom, to the mouths of Euphrates River, the current generally sets down the middle of the gulf, but it is often very weak, and at times sets to the northward. Along the shores, a sort of tides prevail, more or less, and frequently a current setting 3 or 4 days to the westward, at a time. It is therefore advisable, for all vessels bound up the gulf, to keep well in with the Persian shore, that they may benefit by the tides or N. W. currents, and also by land winds, which are sometimes experienced. The dows and trankeys, which are well acquainted, may be seen passing along the shore, with a brisk land wind; while other vessels farther out, are becalmed and drifted about by the currents. When the north-westers blow strong, ships near the shore are partly sheltered from their violence by the islands and headlands, under some of which, it may be prudent to anchor until the wind becomes moderate; but during the prevalence of light variable winds, the advantage of being near the shore, is particularly obvious, as vessels are enabled to keep their ground, by anchoring when it falls calm on the ebb tide, or when the current is unfavorable. Such advantages, are not to be obtained in mid-channel, far from the shore, where there is no anchorage.

To steer from Muscat into the gulf.

FROM MUSCAT, Cape Jask bears true N. N. W. ¾ W. distant about 45 leagues, the variation in mid-channel being 5° W. in 1811; but a course steered about N. W. by N. *by compass*, from the former place toward the entrance of the gulf, will carry a ship 4 or 5 leagues to the westward of Cape Jask, if there be no lateral current. When abreast of Kohumbarek Rock, (about to be described) with a steady southerly wind, a course may be steered N. N. W., keeping within 3 or 4 leagues of the Persian shore; but with light variable winds, this shore ought to be kept aboard, as a ship should then, preserve anchoring ground, which is got from 2 or 3 miles, to 3 or 4 leagues from the eastern shore. The depths are 60 and 70 fathoms about mid-channel, in the entrance of the gulf, increasing to 90 and 100 fathoms near the Arabian shore. The Scorpion drifted in 3 hours, from 52 to 104 fathoms, and was obliged to anchor in this depth, within 1½ mile of the islands close to Cape Mussendom, the current setting strong to the westward among the islands around that cape.

Geo. site of Kohumbarek.

KOHUMBAREK, OR MOOBARUK, (the Blessed Hill) commonly called Bombarack Rock, situated about a mile from the beach, in lat. 25° 52′ N. lon. 57° 46′ E. about 9 leagues to the W. N. W. of Cape Jask, is an isolated remarkable rock of square form, discernible from a considerable distance at sea, and when it bears N. 44° W., a perforation is perceived in its eastern and upper corner, which is a mark for the following recently discovered shoal.

Shoal.

KOHUMBAREK SHOAL, in lat. 25° 43′ N. bears *true* S. 47° E. from Kohumbarek Rock, distant about 4 leagues, and if the perforation in the rock is kept open, it will carry a ship well to the south-westward of the shoal, which consists of lumps of rock, with clay between them. This rocky shoal is not above 600 yards long, having on the shoalest part 1½ fathom water, and close to it, 10, 8, and 7 fathoms clay: there is a channel of from 4½ to 6 fathoms between it and the shore.

Ras Karazee.

RAS KERAZEE, OR CAPE KOHUMBAREK, in lat. 25° 49′ N., lies about a league directly to the southward of Kohumbarek Rock, being a projecting headland, from whence the coast stretches to N. N. Westward, which before extended in a westerly direction, from the north side of Jask Bay to this headland. Ships in passing this part of the coast in the night, ought not to borrow under 15, or 16 fathoms, particularly when near the situation of

Kohumbarek Shoal, nor approach it nearer than 12 fathoms in the day. With Ras Kerazee bearing about true N. by E. ¼ E., the Phœnix shoaled to 4, and 3¾ fathoms on a bank, then 4 or 4½ miles off shore, and another ship grounded, by keeping too close in with the land of this cape.

RAS KOLI, OR CAPE HILL, in lat. 26° 20′ N., bears from Ras Kerazee about N. by W. ¾ W., distant 12 or 13 leagues, the coast is of moderate height, and nearly half way between them, projects a little into the sea, where there are some rocks. In lat. 26° 10′ N. there is a peaked hill near the sea, where the coast forms a bay, between Ras Koli and the projection mentioned above; this hill is the northernmost of the high land on the coast, which is low to the northward of Ras Koli, but mountainous inland, both to the southward and northward of this cape. Ras Koli and coast adjacent.

From Cape Jask to Ras Koli, a ship may keep in soundings from 40 to 10 fathoms, in working, except when near Kohumbarek Shoal, she ought not to come under 12 fathoms. About 4 miles to the northward of the former, there are 30 fathoms from 3 to 4 miles off shore, decreasing to 5 fathoms in a run of 2 miles towards it; but higher up the gulf, a ship may run from 30 fathoms, 8 or 10 miles towards the land, before she is in 5 fathoms. When off Cape Jask, or with Kohumbarek Rock bearing E. by S., it will be prudent not to come under 30 fathoms in the night, nor under 20 fathoms in the day; but from lat. 26° N. to 26° 30′ N., a ship may stand into 10 fathoms in the night, and to 6 or 7 fathoms in the day. Sailing Directions.

If abreast of Ras Kerazee, at 3 or 4 leagues distance, with a brisk southerly gale, a N. N. W. course should be steered for the Quoins, which are distant about 20 leagues. From Ras Koli, a course about N. W. by W. is proper, to pass them at a reasonable distance: by keeping 8 or 9 miles from them, a ship may anchor in 30 or 35 fathoms water, if it fall calm; whereas, near them, the depths increase, and the current is stronger.

THE QUOINS,* situated from 2 to 3 leagues to the northward of Cape Mussendom, are 2 high barren islands, having a smaller island near them, called Lump Island; this is in one with the Little Quoin bearing N. N. W. or S. S. E., and on with the Great Quoin, bearing N. W. by W. or S. E. by E. These 3 islands lie near each other, but have deep water in the channels between them, and also between them and a 4th island, that lies to the south of them, near Cape Mussendom. The Great Quoin is in lat. 26° 30′ N., and has 20 or 30 fathoms close to it: and close to Cape Mussendom, Azab or Gap Island is situated, in lat. 26° 22½′ N. The channels between all these islands, have deep water from 30 to 50 fathoms, but some of them are narrow, and the currents being strong and irregular, it is not advisable to pass through any of them, except in a case of necessity. Exclusive of the above mentioned islands, there are 7 others close in, to the westward of the cape, not easily distinguished from the Arabian shore; and Cape Mussendom itself, is thought by some navigators, to be formed by a group of high barren islands, with deep water in the narrow chasms which separate them. From this Cape to Ras Koli, the breadth of the entrance into the gulf, is about 12 or 13 leagues. Quoins and other islands.

Having steered from Cape Kerazee about N. N. W. 18 or 20 leagues toward the Quoins, if it be night, a ship should continue that course until the depth decreases to 34 or 35 fathoms, she may then be certain of being to the northward of the Quoins, and ought to keep away west, till past them; afterward, W. by S. 40 miles, then west until the Great Tumb is seen, distant about 22 leagues from the Great Quoin. After rounding the latter island, in day-light the island Larek will be seen, which is high; should the wind be westerly, a ship Sailing Directions.

* The Great Quoin is called by the Arabs, Benatha, and the Little Quoin Selame, i. e. the Island of Salutation or Welcome.

Kishm. ought to stretch over toward the east part of Kishm Island, taking care in passing along, not to come under 30 fathoms in the night, nor under 20 fathoms in the day; for in these Angaum. depths, between the east end of Kishm and the island Angaum, a ship will be from 3 to 1½ miles off shore, and under 20 fathoms, the water shoals suddenly to 9 fathoms coral rock; but after passing Angaum, the Kishm shore may be borrowed on, to 5 or 6 fathoms in the day, and 7 fathoms in the night, a shoal bank extending to the S. W. extremity of the island, on which the soundings are very regular. This bank is composed of soft white clay, or mud, having 4 and 5 fathoms at the distance of 2 leagues from the S. W. end of Kishm, decreasing regularly to that shore. From the edge of this bank, the water deepens fast on standing southward for the Great Tumb, from which the S. West point of Kishm bears about N. by W. Between these, is the proper channel, on the north side of the Tumbs, through which the tide sets E. N. E. and W. S. W. strong, along the edge of the shoal bank on the Kishm shore, and flows about 10 hours, on full and change of moon. In working, a ship should not stand too far out from this bank, that she may be able to anchor on it, if it fall calm.

Gambroon. GAMBROON, OR BUNDER ABBAS, in lat. 27° 13′ N., situated on the main, about 6 leagues to the northward of the east end of Kishm Island, was a place of great trade in the 17th and part of the 18th century, but at present this town is destitute of commerce. With the town bearing N. 15° W., distant 3 miles, there is good anchorage in 3½ fathoms mud at low water spring tides. The coast between this place and Ras Koli, is safe to approach within a moderate distance, the soundings decreasing gradually toward it.

Geo. site of Ormus Island. HORMUZ, OR ORMUS, distant about 10 or 11 miles N. N. E. from Larek, and nearly of the same extent, has a fort at the north end, situated in lat. 27° 7′ N. lon. 56° 37′ E. by chronometer: this island has a rugged appearance, and several of the high peaks are white from an incrustation of salt.* A rocky spit projects 2 or 3 miles from the S. W. end of the Island, having 4 fathoms hard ground on it about 2 miles off shore; it is very narrow, and close to it there is 9 fathoms. Along the south side of the island there is no danger, and on the N. W. side there is good shelter from S. Easters, by anchoring in 5 fathoms mud at low water, the fort bearing true E. by N. ½ N., the S. W. bluff point S. 36° E., off shore about 2½ miles, toward which the depths regularly decrease. The channel between this island and the east end of Kishm is 3 or 4 leagues wide, and very safe; the channel between it and the main is also safe, with soundings in it from 5 to 7 fathoms, where ships may find shelter when necessary. When the Portuguese possessed the city of Ormus, it was one of the richest in the east, and a place of great trade; but after being taken in April, 1622, by Shah Abbas, king of Persia, with the assistance of the English, the trade was removed to Gambroon.

Larek Island. LAREK, OR LAREDSH, about 5 miles long and 4 broad, is barren, with very few inhabitants, not so high as Ormus, and bears nearly N. N. W. from the Great Quoin, distant 7 or 8 leagues, its south point being in about lat. 26° 50′ N. About ⅓ from its west Geo. site. end, in lat. 26° 52′ N. lon. 56° 28′ E., stands a remarkable conical hill, very perfect in form. There is no danger within ½ a mile of this island, and it lies near the east end of Kishm, where ships may find shelter in N. W. and West winds.

Kishm Island. KISHM, OR KISHMA,† (Boat Island) the largest Island in the gulf, extends about

* The Imaum of Muscat, farms this island from the king of Persia at present, and obtains a small revenue from the rock salt; he also farms the town of Gambroon, and keeps an armed force there.
There is said to be 2 cisterns or tanks of fresh water on the N. W. end of Ormus.

† Called by the Arabs Jeziret-Tauile, by the Persians Jeziret-Draas, and by the ancients Oaracta, where Arrian

20 leagues E. by N. and W. by S., the eastern part being about 6 or 7 leagues broad; but from the middle westward, it is thought not to be above 7 or 8 miles in breadth.

There is a good channel between Kishm and Larek, but care is requisite to avoid a bank, said to project nearly 2 miles from the east point of the island, which is 1 or 2 miles south of Kishm Town, known by a grove of date trees.

Kishm Town, in lat. 26° 57′ N. lon. 56° 24½′ E., situated at the east end of the island; is walled round, and has a small oblong fort within the walls. To the northward of the town, a mud bank extends out about 3 miles parallel to the shore, which is steep from 16 to 9 fathoms, then the depths regularly decrease. Ships may ride here, well sheltered from west and S. W. winds; the Ternate in 4¼ fathoms at low water spring tides, had the fort of Kishm bearing S. 4° W., distant about 2 miles. It is high water at 11 hours on full and change of the moon, the flood runs about W. N. W. ½ W., and rises 12 feet. Geo. site of the town.

From Kishm Town, the coast stretches about N. W. to the northern extremity in lat. 27° 2′ N., then West and W. by S. to Luft Point, where it turns round abruptly to the S. E. toward the Piratical Port of Luft, situated in lat. 26° 55′ N. lon. 55° 55′ E., a little to the southward of which, the coast trends westerly to the extremity of the island, forming the deep bay of Luft, which is nearly filled with low islands covered with brush-wood. Geo. site of Luft.

LUFT HARBOUR, is well sheltered; H. M. S. Chiffonne, (in the expedition against the pirates, in 1809-10,) at anchor in 9 fathoms mud, had the N. W. point of the road bearing N. W. by compass, Inderabia, a small woody island, on with the N. E. point N. ½ E., and Luft Town S. E. ¼ E. distant nearly 3 miles.

Kishm is separated from the main by a good channel, which opposite to the northern extreme of the island is about 8 miles wide, but not 3 opposite to Old Luft, which is near the point of this name; from hence, it is said to wind among several woody islands to Basidu or Bassadore Point, the western extremity. The bottom is generally mud, and the deepest water near the island, but rocky ledges project far out from the point, many of them visible at low water, which must be avoided: on approaching Luft, the soundings become irregular, with rocky bottom, and rapid tides. Channel within Kishm.

The south coast of Kishm, from the eastern extremity, forms a concavity to the small town of Suzar or Tennain, in lat. 26° 48′ N., near which there is a ruined pagoda, and about 1½ mile to the S. E. of the town there is 16 fathoms water. From hence, to Overfall Point, opposite to the Island Angaum, the coast extends nearly in a direct line, and ought not to be approached under 20 fathoms between the east end of the island and this place, which will be within 2 miles of the shore in some places; and Overfall Point must be approached with caution, being fronted by foul ground and irregular soundings. Southern coast.

ANGAUM, OR HINDJAM, commonly called Angar, situated on the south side of Kishm, nearly mid-way between its extremes, is of round form, moderately elevated, about 4 miles in extent; its south point is in lat. 26° 37′ N., the north point in lat. 26° 41′ N. lon. 55° 57′ E. Angaum. Geo. site.

The channel between Kishm and the north point of Angaum is more than a mile wide,

states Nearchus to have seen the tomb of king Erytheas, after whom the Persian Gulf was anciently named Erythrean Sea.

Although this island has a very sterile aspect, yet, before the inhabitants were oppressed by the Jowasmee pirates, 100 villages are said to have flourished on it; the natives at present, are chiefly weavers, and appear hospitable.

The whole island, and a large portion of the opposite coast, in which are mines of brimstone, is farmed of the king of Persia by the Imaum of Muscat.

Sound. and affords good anchorage in 9 or 10 fathoms sand, with the north sandy point of Angaum bearing about W. ½ S., off shore about ½ a mile; this place is called Angaum Sound.*

To enter it from the S. E.; keep one-third channel over from Angaum, but do not come under 7 fathoms towards it, nor nearer than 3 cable's lengths, as from 6 fathoms, the water shoals at once to 2 or 1½ fathoms in some places; and be cautious not to approach Overfall Point on the Kishm shore, mentioned above.

In the deep bay, northward of the north point of Angaum, there are great overfalls from 19 or 20 fathoms to 5 fathoms sand, but from the latter depth, the decrease is regular to 3 fathoms about a mile off shore. The western channel is very wide, but the west side of Angaum must have a birth of 1¼ mile, as you shoal from 6 fathoms mud to 2 fathoms rocks at a cast, within half a mile of the shore: between the N. W. and North points, the island may be approached to ½ a mile, and in rounding the latter point, it may be approached West Bay. within 200 yards with safety. The large bay on the west side of Angaum is exposed to sea winds, but the 6 fathoms flat, that extends from the western point of this island towards Kishm, may probably break the force of the sea; or on the appearance of a S. W. gale, a ship may slip her cable at this anchorage, and run into the sound.

In September 1811, Capt. H. W. Sealy, of the Bombay Artillery, discovered 3 wells with Fresh water. fresh water on Angaum, the 1st within 100 yards of the beach, about ½ a mile southward of the east point of the island, being 22 feet deep, and 4½ feet in diameter, and had 4 feet water in it. The 2d well, is about ¼ mile N. N. W. from the S. E. point, and 300 yards from the beach, at the entrance of a valley; it had about 6 feet water in it, and was larger than the former.

The 3d well, is to the N. Eastward of the south point, about a ¼ mile from the beach, having one or two palm trees ⅓ of a mile to the westward; it is on rising ground, 42 feet deep, 5½ feet in diameter, had 6½ feet water in it, a little inferior in quality to that of the two former wells. About 40 yards east of this, there is a 4th well, with one of its sides fallen in, and filled up, all but about 20 feet.† Extensive garden ground, and ruins of houses here, and in other parts of the island, indicate its once flourishing state, and near the White Mosque at the north point of the island, is the remains of a considerable town, with 18 tanks or reservoirs for holding water, about half of them still arched over, and lined with brick, but they are much filled up with clay and sand.

Geo. site of Kishm S. W. Point. KISHM S. W. POINT, in lat. 26° 32′ N. lon. 55° 22′ E., is fronted by an extensive bank, already mentioned in the preceding directions for entering the Persian Gulf: proceeding from Angaum to the westward, the soundings are regular toward Kishm, until the bank is approached, which is steep to, having 30 fathoms near to its southern extremity, which in 5½ and 6 fathoms is in lat. 26° 26′ N., and white water extends about a mile farther out. This bank should not be borrowed on under 5 or 6 fathoms; it is an excellent mark in the night or in thick weather, to point out a ship's position when passing between Kishm and the Great Tumb.

Bassadore Point. BASSADORE,‡ OR BASIDU POINT, the N. W. extremity of Kishm, in lat. 26° 38′ N., bears North from the S. W. point, distant 6 or 7 miles, having within it the ruins of the once flourishing Portuguese Town of that name. At this place there is an excellent

* H. M. S. Chiffonne at anchor in the sound in 11 fathoms sand, had the red square building on Angaum, with an octagonal top bearing W. 15° S., the point that seems to form the east entrance as seen from the ship S. 21° E., point of Kishm E. 15° S., off shore ⅓ of a mile.

† In the dry bed of a river, on the west side of the island, also near the centre of a valley which nearly extends across the island, Capt. Sealy thought that fresh water might be got by digging. Until he explored this island, it was supposed by European navigators, not to contain any fresh water.

‡ The S. W. point, commonly has this appellation, which appears to be incorrect.

harbour, but the approach to it is shoal: H. M. S. Chiffonne in steering E. 15° N. for the point, had only 3 fathoms water in passing over an extensive flat, and in returning had rather less at ¾ ebb; but the Mornington kept nearer to the Persian shore, and had not less than 4 fathoms water. Were this channel well explored, ships would find excellent shelter, with wood and water, the latter out of tanks at Basidu.

CAPE BOSTANA, in lat. 26° 30½′ N. lon. 54° 52′ E., the first headland on the coast of Persia to the westward of Kishm, is a low sloping point with rugged hills above it, and there are regular soundings between them. Bostana and Schinas, are 2 small towns to the eastward of the Cape, between it and Linga, where refreshments may be got for one or two ships. Off the pitch of Cape Bostana, in 10 fathoms, the bottom is hard sand and gravel. Geo. site of Cape Bostana.

LINGA, in lat. 26° 33′ N. situated about 8 miles eastward of Cape Bostana, is the chief town of the Jowasmee pirates on the Persian Coast, having regular soundings close to the shore. The anchorage is good, with shelter from N. Westers, as the outer point may be brought to bear S. W. by W. when at anchor in 5 fathoms muddy bottom. Linga.

CAPE DSJERD, in lat. 26° 36′ N. is distant 10 or 12 miles N. W. by W. from Cape Bostana, and the excellent bay of Mogoo is formed between them, having regular soundings all over it, the ground stiff clay, and the deepest water is towards its eastern side. It affords shelter against the prevailing winds in the gulf, and has capacity for the largest fleets. Mogoo Town lies at the bottom of the bay, in lat. 26° 38′ N., off which a ship may anchor in 5½ fathoms, with it bearing N. by E., and the western extreme W. by N. about 1½ or 2 miles off shore, where she will be sheltered from a N. Wester. The best birth to ride during a S. Easter is in 6¼ fathoms clay, off shore ¾ of a mile, Polior Island S. ¼ W. to S. by W. ½ W., extremes of the bay from W. by N. to E. S. E. ¾ S. Cape Dsjerd. Mogoo Town. Anchorage.

POLIOR SHOAL, situated between Polior Island and Mogoo Bay, but nearest to the latter, is composed of rocks, shells, and sand, about ½ a mile in diameter, with irregular depths of 14 to 4 fathoms on it in general; but on the shoalest part there is only 14 or 15 feet at low water. The Island Polior bears from it S. by W. ¼ W. to S. ¼ W. by compass distant 7 or 8 miles, extremes of the Persian Coast from N. W. by W. to E. N. E., and Cape Dsjerd on with the eastern fall of Cherak Hill. This hill bearing *true* N. 48° W. will carry a ship clear to the northward of the shoal, and into Mogoo Bay, where there are 10 and 9 fathoms water within the shoal, decreasing over a bottom of mud, gradually toward the main. Polior Shoal.

GREAT TUMB, in lat. 26° 17′ N. lon. 55° 24′ E., is a low level Island about 3 miles long with some trees on it, distant 4 or 4½ leagues south of the S. W. end of Kishm, and may be seen about 5 or 6 leagues from the deck of a large ship. A ship may approach this island within ¾ or ½ a mile, and find tolerable anchorage under it during a N. Wester: a bank projects 3 or 4 miles to the southward, not dangerous, as there is not less than 7 or 8 fathoms on it, except near the shore. Geo. site of Great Tumb.

The Prince of Wales cruizer, anchored in 7 ¼ fathoms sand at low water, the island bearing from *true* N. 38° E. to N. 54½° W., the large tree near the watering place N. 18° W. about 2 miles off shore: found the tide running east 3 miles per hour; its rise and fall 6 feet. The boat in sounding, found the depths decrease regularly from 7 to 3½ fathoms sand about ¼ mile off shore, and within this distance the bottom rocky. In crossing the bank about 3 miles off shore in 10 to 12 fathoms, had overfalls of 1½ and 2 fathoms, but never less than 10 fathoms water: off the east end of the island, there is 13 fathoms 1 mile

Watering place. off shore. The south point of the island is low, and the watering place is at a well to the westward, near a banyan tree, at some distance from the beach.

Little Tumb. LITTLE TUMB, OR TUMB NAMIU, in lat. 26° 14′ N. distant about 8 miles W. ½ S. from the Great Tumb, is nearly of equal size, barren, and not so regular in appearance; and like the former, uninhabited. This island seems to be clear of danger: the Prince of Wales anchored in 18 fathoms about 1½ mile off shore, the extremes bearing from N. 18° W. to N. 77° W., and the boat found the depths decrease regularly to 1¾ fathoms within a ship's length of the shore. Steering round to the west end of the island, 1 mile off shore, had from 10 to 7¼ fathoms: from the West to the N. W. end, had from 7 to 15 fathoms hard sand, with the north extreme bearing *true* E. 15° N., south extreme S. 60° E.; and the boat found not less than 5¼ fathoms at a cable's length from the shore: off the N. W. end, in a sandy bay, she got 5 fathoms within a ship's length of the shore. With the island bearing from E. 12° S. to S. 32° E., had 30 fathoms about ½ a mile off shore.

Geo. site of Bomosa. BOMOSA, OR BOUMOSEH, in lat. 25° 51′ N. lon. 55° 9′ E., distant about 11 leagues N. N. W. ¾ W. from Sharga, and 8 leagues to the S. S. W. of the Little Tumb, is an uninhabited island, about 4 or 5 miles long, conspicuous by a high round hill near its centre, with several small hummocks at the east end. There is deep water near it to the southward, but its northern side, seems not well known to European navigators.*

Surde. SURDE, OR SURDY ISLAND, in lat. about 25° 50′ N., 9 leagues to the westward of Bomosa, and 8 leagues to the south of Polior, is about 6 miles in length from N. E. to S. W., and 4 miles broad. From the N. W. end a reef of rocks projects out 2 miles, but the southern part of the island is clear, where the town is situated. At this place, there is said to be anchorage, also water and refreshments may be obtained at moderate prices. There are 3 hills on the island, 2 of them near each other; and the third, which is the highest, and farther to the southward, has near it a white pagoda.

Nobfleur. NOBFLEUR ISLAND, in lat. 26° 6′ N., bears S. S. W. from Polior distant 5 leagues; it has a hill near the east end, which in most views forms a saddle, and may be seen 6 leagues from the deck, but the other parts of the island are low. At the distance of 1½ mile from the south end of the island, the depths are from 28 to 40 fathoms mud; but a ledge of rocks above water projects from the west end about 2 or 3 miles. In the channels among those islands, also betwixt them and the Tumbs, and to the southward of them, near the Arabian Coast, the general depths are from 35 to 50 fathoms.

Polior. POLIOR, OR BELIOR, in lat. 26° 18′ N.,† lon. 54° 40′ E. is an uninhabited island, situated to the south of Mogoo Bay, being about 5 miles long from N. N. E. to S. S. W., and 3 miles broad, and it may be seen 7 leagues. Two rocks above water lie about a cable's length off its west end, but in all other parts the island seems steep to, and may be approached within a cable's length on the east side. A ship may lie completely sheltered from a N. Wester, by anchoring in 28 fathoms about a ¼ of a mile from the shore, with the extremes of the island from S. W, ½ W. to N., and Nobfleur S. W. ½ S. On the north side of the island, there are 50 fathoms within a ¼ mile of the shore.

* In the geographical situations, and descriptions of places in the Persian Gulf, much useful information has been obtained from the observations of Capt. Wainwright of the Royal Navy, Capt. J. A. Pope of the Minerva of Bombay, employed in the expedition against the pirates, in 1809 and 1810, and particularly from the surveys of Capt. H. W. Sealy of the Company's Artillery.

† Its south end in lat. 26° 16′ N. and the north end in 26° 20½′ N.

A reef of rocks was formerly thought to project from the N. W. end of this island to a great distance, but the Prince of Wales, found various depths in passing along the west side of the island at $\frac{3}{4}$ of a mile to $1\frac{1}{2}$ mile distant, from 7 fathoms rocks to 25 fathoms no ground; and no danger was perceived, excepting the 2 rocks above water, mentioned above. In some parts, the bottom was from 8 to 10 fathoms sand, about $\frac{1}{2}$ a mile off shore; and off the north end of the Island, 10 fathoms was found within a $\frac{1}{4}$ mile of the shore.

Sailing directions.

With a westerly wind, turning across the west entrance of Kishm Channel from Cape Bassadore, attention to the tides is requisite, as they sometimes run 3 or 4 knots, for 6 hours each way. Having crossed over in soundings at discretion, from 6 to 10 fathoms, (but in the night 8 fathoms is close enough) the water will deepen to 13 fathoms in Schinas Bay, where there is good anchorage about $\frac{3}{4}$ of a mile off shore in 10 fathoms, with the Mosque bearing N. and Cape Bostana W. S. W. Here, a vessel is well sheltered from the violence of the N. Westers, and may procure refreshments at a moderate rate, as mentioned above.

With a turning wind, the channel between Polior and the main should be chosen, which is wide, but a ship drawing above 12 or 13 feet water, must be careful to avoid Polior Shoal, situated nearly in mid-channel, and if irregular hard soundings are got on the edge of it, she ought to haul off from it immediately.

But with a southerly, or steady fair wind, a ship should when abreast of the Little Tumb, steer west 20 miles, then W. $\frac{1}{2}$ S. for Polior, observing to pass between it and Nobfleur nearly in mid-channel, or rather nearer the former; a good look-out is proper in the night, when running between these islands, as the water is deep and not fit for anchorage, and the soundings are no guide in approaching them, except very close to the shore.

Having passed to the southward of Polior with a fair wind, a course steered W. N. W. 8 or 9 leagues will bring a ship near the Island Kyen in regular soundings; but when this island bears N. by W., or in the night, she must not come under 20 fathoms towards it, for from 17 fathoms the water shoals suddenly to 7 fathoms rocky bottom, on a reef that projects about 2 miles from the south part of the island.

Kyen.

KYEN, OR KAEZ, (called Gis by the inhabitants) in lat. 26° 29′ N. lon. 54° 8′ E., is fruitful, well inhabited, and better planted with trees than any island in the gulf; it is low, not to be seen above 4 leagues, and in size about the same as Pollior. A ship may anchor abreast the village at the south-east end of the island in 9 fathoms sandy bottom, the extremes from N. $\frac{3}{4}$ E. to W. $\frac{1}{2}$ N., and Cherak Hill N. by E. $\frac{1}{4}$ E., off shore $1\frac{1}{2}$ mile, where she will be sheltered from a N. Wester. Water and other refreshments are obtained here at moderate prices, but the inhabitants of these islands, although apparently civil, are generally hostile to Europeans in small vessels, and not to be trusted. There is also anchorage off the town at the N. E. end of the island in 8 fathoms mud, about $2\frac{1}{2}$ miles off shore, with the island bearing from N. 38° W. to S. 15° E. *true*, and a small fort S. 52° W.

Channel between it and the main.

Excepting the reef off the south end, the island is safe to approach in every other part, where there is anchorage, in case of necessity, at the east, west, or north sides of it; 9 or 10 fathoms is sufficiently near for any vessel. Between it and the main, the channel is 3 or 4 leagues wide, with deep water from 35 to 20 fathoms, decreasing regularly toward the coast, but it shoals quick when near the island, from 24 to 12 and 14 fathoms sandy bottom; then to 10 fathoms about a mile off. Cherak Hill, which is a remarkable hill on the main, bears N. N. E. when on with the Island Kyen, and is a good mark for it. If in the night, when passing between the island and the main, you shoal fast toward the former, it will be prudent to tack or haul off from it, and when the soundings are 33 and 34 fathoms regular, you will be in a fair track.

Coral Shoal.

A SHOAL, of coral and sand, about 2 miles in extent, bears from Kyen Island west, distant 12 miles, on which the depths are from 5 to 9 fathoms, and there is from 22 to 33

fathoms water close to its edge. When the Mornington was upon the shoalest part, the remarkable hill on the main called Cherak Hill bore *true* N. 41° E., and the N. West end of the Island Hinderabia N. 48° W. Cherak or Jarraeck Hill is in lat. 26° 56′ N. lon. 54° 17′ E.

Geo. site of Cherak Hill.

Geo. site of Hinderabia.

HINDERABIA, in lat. 26° 39′ N. lon. 53° 42′ E., is a low, narrow, level island, about 3 miles in extent, with a grove of date trees near its centre. The channel between it and the main, is about 2 or 3 miles wide, with soundings from 7 to 10 fathoms mud, and thought to be safe. If a ship run for shelter under this island, she ought not to approach its S. E. end within a mile, until a remarkable tree which stands by itself bears *true* W. 18° N.

Geo. site of Busheab.

BUSHEAB, OR SHEIK SHAIB, in lat. 26° 48′ N. and extending from lon. 53° 19′ to 53° 31′ E., next to Kishm is the largest island in the gulf, of middling height and level, with groves of date trees, particularly on the side next the main; it is inhabited, and subject to the Sheik of Nakelo. The channel between it and the main, is 6 or 7 miles wide in the middle, and more at each end; at the eastern entrance of which, about ⅓ over from the island, there lies a small sand bank, about a mile in length, and very narrow, having only 2 fathoms water on it, with 10 fathoms within a mile of it to the northward, and 20 fathoms or more about mid-channel.

From about the middle of the south side of the island, a shoal extends to the S. W. with 8, 7, 5 and 3 fathoms rocks upon it, and 23 fathoms mud close to its edge, not above a mile off shore.

The Benares cruizer tacked upon it in 2½ fathoms rocks, a town bearing *true* E. 9° N., the other extreme N. 38° W., not above a pistol shot off shore.

A shoal also projects from the west end of the island to a considerable distance, said by some navigators to have 7 fathoms water on it, about 1½ mile off the west end of the island, and to be 2 miles broad from north to south: but this reef is considered to be steep to, and dangerous, for a snow belonging to Bombay, not long ago, was wrecked on it, and her cargo seized by the Sheik. Not long after, one of the Company's Packets ran upon this island in the night and was wrecked. At the east end of the island there is good anchorage in 5 or 6 fathoms, where fresh water may be got, but the Sheik is a predatory chief, not to be trusted.

Schittuar.

SCHITTUAR, is a low small island, separated from the east end of Busheab by a channel about ¾ of a mile wide, in which there are 6 and 7 fathoms water; but a spit that projects from the S. E. end of Busheab, at the extremity of which there is only 3 fathoms, contracts the channel to ½ a mile. The best track, is about ⅓ over from Schittuar, where the depth is 6 fathoms in mid-channel; but this passage is too contracted for large ships.

In the channel between Schittuar and the main, the soundings are irregular over a rocky bottom, with ripplings; which, together with the shoal bank mentioned within Busheab, seem to render the inside channel not so safe as had been formerly supposed.

Nakelo.

NAKELO, a town on the coast opposite to the Island Schittuar, has a fort and a detached tower for its protection, with regular soundings near the shore; but the anchorage is exposed to N. W. winds, and the town is within a point of land, that forms the south side of an inlet or river. Cheroo, is a village about 4 miles S. E. of Nakelo, and subject to the Sheik of that place. Between them the shore is steep, therefore a ship should not borrow under 15 fathoms, this depth being within ¾ of a mile of the shore.

The whole of the Persian Coast, from the Island Kishm to Busheab is moderately elevated, interspersed with hills.

To sail from Kyen toward Busheab.

Having passed between Polior and Nobfleur, and being 6 or 7 miles to the southward of

Kyen, a ship should steer N. W. by W. 10 leagues, the Island Busheab will then be seen, and ought not to be approached on the south side nearer than 40 fathoms, this depth being about 2 miles from the shore.

ISLAND MAY, in lat. 25° 49′ N., bears about south from Busheab, distant 20 leagues, and nearly the same distance from Kyen; there are soundings to the eastward of it, 14 to 25 fathoms rocky bottom, from 4 to 10 leagues off. This island was discovered by Commodore Watson, but is seldom seen, as ships do not stand so far over from the Persian shore. Island May.

CRESCENT SHOAL, in lat. 26° 44′ N. lon. 51° 43′ E., lies nearly south from Cape Berdistan, and about 27 leagues west from Busheab; the depths decrease from 36 and 38 fathoms soft ground, to 26 and 28 fathoms rocky bottom, close to the edge of this dangerous shoal, which is nearly dry. About 6 leagues S. W. by W. from this, there is another shoal of a round form, having a ridge extending to the northward, called the SCORPION, which is in lat. 26° 34′ N., also nearly dry, with soundings around, and to the westward of it, from 15 to 22 fathoms rocky; between them the bottom is of similar quality, and the depths vary from 16 to 25 fathoms. These shoals were discovered in May, 1796, by the ship Pearl: between them and Ras Nabend, the soundings are generally from 30 to 44 fathoms; and a ship can have no occasion to stretch so far over from the Cape, as to approach either, or get on the foul ground bordering upon these shoals. Geo. site of Crescent and Scorpion Shoals.

Having passed Busheab on the south side, at 3 or 4 leagues distance, a N. W. course should be steered until soundings are obtained on Berdistan Shoal, which is an excellent guide. In working between Busheab and Ras Nabend, a ship should not come under 30 fathoms in the night, for 25 fathoms is within 1 mile, and in some places ½ a mile of the shore. In this space, there is no shelter from the north-westers, nor any good anchorage. To sail from Busheab to Cape Berdistan Shoal.

RAS NABEND, OR CAPE NABON, in lat. 27° 24′ N. lon. 52° 52′ E., slopes gradually in a low point to the northward, from a piece of regular table land; but a little way to the southward it is uneven, of various shapes, having a low appearance, the land behind it being high. Within 2 miles of the Cape, the water shoals suddenly from 30 to 13 fathoms. Geo. site of Ras Nabend.

On the north side of this Cape, there is a river which runs parallel to the coast, where a few pirate vessels are stationed, ready to surprize defenceless traders. When they see a ship in the offing, a small boat is dispatched with a few vegetables, or other refreshments; but in reality to make observations on the strength of the ship, to enable them to judge if an attack ought to be made by the vessels from the river.

ASLO, OR ASLOO, is a town opposite to Ras Nabend low point, on the north side of the river; from this to Tahrie, in lat. 27° 42′ N., the coast forms a deep bay, which extends to Konkun, the northernmost town in it; then the coast takes a westerly direction toward Cape Berdistan. The land around this bay is high, and this part of the coast is well-sheltered from north-westers by the foul ground of Berdistan, which extends 14 or 15 leagues to the S. E. and Southward of the Cape, reaching nearly to the parallel of Ras Nabend. Aslo, Tahrie, and Konkun Bay.

Under the high land to the northward of the Cape last mentioned, there are 30 and 35 fathoms within 2 miles of the shore.

KONKUN, OR CONGOON, in lat. 27° 48¾′ N. lon. 52° 6′ E., is the northernmost town in the bay of this name, off which there is good anchorage, in from 5½ to 7 or 8 fathoms soft bottom, and shelter from N. Westers. About 5 leagues west of Konkun, on the Geo. site of Konkun.

high land, there is a remarkable table hill, called BARN HILL, which answers as a guide in rounding Berdistan Shoal.

About 6 leagues to the westward of Konkun, there is a projecting part of the coast that forms the western point of Konkun Bay, and is in lat. 27° 48′ N.; this is by some called Cape Berdistan, as the easternmost range of breakers extends from this point to the S. S. Eastward; but the head-land, which may be considered the *true* Cape, bears about W. N. W. 8 leagues distant from the west point of Konkun Bay.

Geo. site of Cape Berdistan.

RAS BERDISTAN, OR CAPE BERDISTAN, in lat. 27° 58′ N. lon. 51° 26′ E., is a remarkable headland, easily known by the Hills or Hummocks of Kenn, visible 15 leagues in clear weather, which are situated close to it; and to the southward, at 4 or 5 miles distance, there is a small island covered with trees, called Mongella, or Monjellah.

Berdistan Shoal.

BERDISTAN SHOAL, is very extensive, and the breakers on the foul ground lie in 2 ranges; one of these projects from the Island Mongella to the S. S. Eastward near 3 leagues, between which, and the other range, there is a space about 1½ mile broad, where small vessels may anchor in 7 or 8 fathoms stiff clay, and be sheltered from the N. Westers in cases of necessity, with the island bearing about N. N. W. The eastern range of breakers extends to the S. Eastward 9 or 10 leagues from Mongella, then takes a N. Easterly direction toward Konkun Bay. In approaching the foul ground of Cape Berdistan, great attention to the lead is requisite.

Sailing Directions.

After passing Cape Nabon with a westerly wind, a ship ought not to stand far to the northward into the Bay of Konkun, not farther than lat. 27° 35′ N., or at most 27° 40′ N., or she will be obliged to haul to the W. S. W. and S. Westward in rounding the foul ground of Berdistan. Some vessels after getting 30 fathoms in the bay, have stood out W. by S. and W. S. W., and soon shoaled from 25 fathoms to 10, 6, and 4 fathoms hard ground, on the bank, which ought to be approached by a stranger with caution, observing not to come under 10 fathoms in the day, nor under 13 fathoms in the night. With a working wind, a long stretch in, may be made during the day, when the bearings of the land are seen. Barn Hill must be kept to the northward of east, till the Hills or Hummocks of Kenn are bearing to the eastward of north. When those hummocks bear east, or Barn Hill E. by S. ½ S., a ship is clear to the northward of all danger on the bank, or foul ground of Berdistan.

Except in the gap between the breakers, there is no shelter from the N. Westers on any part of the bank, which may, when blowing hard, render it necessary to run to the S. Eastward round the breakers, and anchor under lee of them, or in Konkun Bay, if a ship can fetch into it. When this is necessary, much ground is lost by running to the eastward for shelter, and in getting out of the bay when the wind changes. Off the gap in the reef there are regular tides, which run about 2 knots per hour, W. N. W. and E. S. E., nearly in the direction of the coast. It is high water from 7½ to 8 hours on full and change of moon, the rise of tide 9 or 10 feet.

Geo. site of Keyn and Zezarine.

KEYN AND ZEZARINE, the former in lat. 28° 2′ N. lon. 49° 54′ E., the latter in lat. 27° 49′ N. lon. 50° 4′ E., are both of sandy appearance, low and small, not to be seen above 3 leagues from the deck, and lie directly to the westward of Cape Berdistan, distant about 25 or 27 leagues; in standing from the Cape toward these Islands, the depths increase to 30 and 35 fathoms. The southernmost is called Cock or Keyn, (but Arabia by the Arabs,) and is a round sand bank, with a few shrubs on it; the eastern point has rocks above water, and sunken rocks extend all round to the distance of half a mile, with overfalls from 20 to 14 fathoms, then to 5 and 3½ fathoms; on which account, this Island should not be approached nearer than 30 fathoms.

Zezarine, called Persia, by the Arabs, bears N. N. W. from Keyn, distant about 5 leagues,

it is rather larger than the other, having on the southern end a rock, resembling a boat under sail, when first seen; this island should not be approached nearer than 32 fathoms, there being 25. fathoms about 1 mile from it on the north side. These isles are frequented by turtle, and large birds, but imperfectly known, as ships seldom stand so far over from the Persian shore.

Coast from Cape Berdistan to the northward.

To the northward of the Island Mongella, and near the shore, in the bay adjacent to the hummocks of Kenn, there are some rocks above water, but they are not in the fair track toward Busheer, being situated near the shore. From Cape Berdistan, and the hummocks of Kenn, the coast takes a northerly direction about 18 leagues, to a place called Gilla, where a bay is formed on the south side of Rischar point, called Rischar, or Halela Bay, from a high mount inland of this name.

Geo. site of Halela Hill.

HALELA, OR HALILAH HILL, is a long ridge, extending nearly N. N. W. and S. S. E., the peak or southern part being in lat. 28° 40½′ N., another part called the Paps, lies directly to the east of Busheer; and the northern part of the ridge, or brow of the hill, which is a sea-mark, is in lat. 29° 19′ N. lon. 51° 26′ E. There are 2 remarkable hills on the high land in lat. 28° 29′ N., called the Asses Ears.

After the hummocks of Kenn are brought to bear E. S. E., the coast is clear of danger to Busheer, with regular soundings along it; a ship may then stand into any depth at discretion, where there is good anchorage in 5 to 10 fathoms.

Busheer. Sailing directions.

After rounding Cape Berdistan, observing not to come under 12 fathoms in the night, nor under 10 fathoms in the day, when the hummocks of Kenn bear E. S. E., in 14 or 15 fathoms, a ship should with a fair wind steer N. by W. 16 or 18 leagues, which will bring her near the south part of the low land of Rischar; in sailing along, from 20 to 25 fathoms are good depths until Rischar point is approached within 4 leagues, then they begin gradually to decrease to 12 and 10 fathoms. It will be prudent with a S. W. or Southerly wind, not to borrow under 12 fathoms in crossing the bay, but when the low point of Rischar is bearing about E. by N., the shore may be borrowed on occasionally to 5 or 4½ fathoms, until a ship anchor in Busheer Road. With the town bearing E. by N. the anchorage is very convenient, as a boat can then sail off, and on, between the ship and town during a N. Wester.

Great attention to the lead is requisite in passing Busheer, as the low point of Rohilla bears nearly N. W. from the town, and is scarcely discernible, even in the day; a few shrubs or bushes, is all that can be seen when in 3 fathoms, but the soundings decrease regularly toward the shore.

Geo. site of Busheer Town.

ABUSCHAHR, (the town of Abu) OR BUSHEER, in lat. 29° 0′ N. lon. about 50° 56′ E., is situated on the north point of a low peninsula, of which Rischar point, about 4 leagues to the southward, forms the other extreme. The peninsula is a dry sandy desert, and subject to inundations by high tides, but the town is well supplied with fruits and vegetables, brought from the inland country. The water is very brackish and unwholesome, and should not be used except when mixed with spirits, lime juice, or some other ingredient. This town was formerly fortified by a wall and towers, but is now defenceless, and in a ruinous state. The variation in 1811 was 4° 40′ W.

Anchorage.

A ship arriving off Busheer with a strong southerly wind, ought not to anchor in the outer road, where there is no shelter from such wind, and the extensive shoal between Rohilla point and the road, forms a lee shore. The N. Westers blow directly into Busheer, and when the southerly wind is strong, the N. Wester may be expected with nearly double violence; it is therefore, a bad road, with either of these winds.

When a vessel drawing less than 14 feet arrives at this place, and intends to go into the inner road or harbour, the signal is generally made for a pilot, who is sent out without delay. On the bar the depths are 2¼ and 2½ fathoms, and within it, in the inner road, 3 and 3¼ fa-

thoms; the tide flows to 7½ hours on full and change of moon, and rises 6 or 7 feet. Here, as at Bombay, and on the Guzarat coast, the day tides are the highest when the sun has north declination; but they are highest in the night, when the sun is in the southern hemisphere.

The land at the back of the town is high, the most elevated part being the ridge and peaks of Halela Hill, described above. Pilots for Basra, may be obtained at Busheer.

Island Karak, and how to steer for the anchorage.

KARAK, OR KAREDSH FLAGSTAFF, is in lat. 29° 15¾′ N. lon. 50° 27′ E.: this island is about 2 or 2½ leagues in length, of moderate height, distant from Busheer Town 11 or 12 leagues, and may be seen from the road of Busheer in clear weather. Should the wind blow strong at S. or S. W., a ship ought to stand over for this island; when in 4 fathoms with Busheer Town bearing E. by N. or E. N. E., a course steered *by compass* N. W. by W., will carry her direct for the fort on the N. E. end of Karak, which may be passed within a cable's length; she ought then to anchor between the islands in 6 or 7 fathoms, smooth water; but if a sudden change of wind from N. Westward, is in the least apprehended, it would be imprudent to remain in this situation, for in such case she ought to weigh immediately, and after passing round the fort point, anchor to the S. Eastward of it in 9 or 10 fathoms, about ½ a mile from the shore. On the north and east sides, this island may be approached to 5 fathoms, but on the other sides, it is not safe to come under 15 fathoms. The whole island, except the N.E. sandy point, is lined with coral rocks, which on the N. E. and South sides, extend in some places near ½ a mile from the shore. The channel between Karak and Korgo is very safe, about a mile wide in the narrowest part: keep about ⅓ channel over from Karak, there is 5 fathoms water within 50 fathoms of the N. E. sandy point. With a N. W. wind the best anchorage is in 9 fathoms sand, the Brab-Tree in the fort bearing N. 57° W. and the south extreme of the island S. 20° W. *true* bearings. With a S. E. wind run into the channel, and anchor to the northward of the large bushy tree near the wells, it bearing S. 16° W. the brab-tree in the fort S. 37° E., and the N. W. extreme of Karak west, in 8 fathoms sand.

Water and other refreshments.

The water at Karak is much better than that of Busheer, particularly at the wells on the north side of the island, near the large tree: fire-wood is very scarce, what they have being brought from Bender-rigk, and the northern coast. Fish are plentiful, which, with dates, is the principal food of the inhabitants, for they have no grain but what comes from Busheer, and very few vegetables. Bullocks, sheep, and poultry, are to be procured, but at exhorbitant prices when a supply is wanted.

Pilots obtained for Basra.

The best pilots for Basra are procured at this place; to carry a ship there and back, they generally receive 150 or 160 rupees, with the addition of 50 more for the trankey that attends, and provisions for 5 or 6 people. It is customary to give a bag or two of rice to the sheik, and one to the pilot's family. During the time the ship is stationary at Basra, he receives 10 rupees per month.

The Island Korgo.

KORG, KORGO, OR KOUERI, is a small low sandy island, 4 miles long, and ½ a mile broad, situated near the N. E. end of Karak, and except on the N. E. side, it is surrounded by a bank of coral rock. The shoal extending from the N. West side of Korgo, about ¾ of a mile, should not be approached under 10 fathoms, as the water shoals from 7 fathoms suddenly, to 1 fathom coral rocks. To avoid this reef in coming from the N. W., do not bring the N. W. extreme of Karak to the westward of S. by W. till the fort bears S. E. by S., you may then haul up for the channel, keeping better than ½ a mile from Karak. The north and east sides of Korgo are not so dangerous, the depths there, decreasing gradually, to the edge of the rocky bank that environs it. The ground about these islands is very indifferent for anchorage, being loose hard sand in several places: Karak is very steep to, except near the fort; 20 fathoms in many places is not above ¾ of a mile from

the shore. A regular tide runs through the channel between the islands, from 1½ to 2 knots per hour on the springs, and it is high water about 9 hours, on full and change of moon.

On both ends of Korgo, there is water, but not so good as that on Karak. The best anchorage is at the north-east part of the island, where there are a few tall date trees; and thereabout a watering place, where near 40 of our people were cut to pieces, in 1768, when the English besieged Karak.

A ship departing from the road of Busheer for Basra, after passing Point Rohilla, will deepen to 14 or 15 fathoms, and may then steer about N. N. W. for Cape Bang, if the wind is fair. With a contrary wind, she will be obliged to anchor when the tide is unfavorable. To steer from Busheer to the northward.

CAPE BANG, in lat. 29° 46′ N., and nearly on the meridian of Korgo, is high land; the coast between it and Rohilla point forms a great concavity, at the south part of which, lies Bender-rigk Bay; and Gunnoah Bay, directly to the S. Eastward of the Cape. Cape Bang.

Departing from Karak with a fair wind for Basra, the pilot will steer N. W. by W. till he shoals the water on the banks called by the pilots, Caraba, having irregular soundings on them, and overfalls from 12 to 7, and from 7 to 5 fathoms; he then keeps away according to the time of tide, with the flood W. by S. with the ebb W. by N., till he gets on the Attmeydon or Allie Meydon: this is a flat 15 or 16 miles long, having regular soundings on it, 6 fathoms at the southern edge, 5 in the middle, and 4 fathoms on the northern part; but he seldom goes under 5½ or 5 fathoms. When he comes near the mouth of Haffar River, (which leads to Basra) the water deepens quickly from 5 to 15 fathoms; if in 5½, it will deepen to 16 or 17 fathoms; this he calls Koor Gufgah, which denotes being near the bar of Basra River, but still continues to steer W. by N. or W. by S., hauling up, or keeping away half a point, as he finds necessary. After these soundings in Koor Gufgah, the depth decreases quickly to 4½ fathoms on the bank called Meuvan, or Meuan by the pilots, and then to 3½ or 3 fathoms on the verge of Basra Bar; with these soundings he still stands across W., or W. by N., till he deepens to 5 fathoms in Koor Abdillah, and there anchors until the next flood tide; or if he has sufficient tide to carry him over, he stands away to clear a bank between Koor Abdillah and Basra River. When he finds himself on the centre of the bar by his soundings, which are 2¾ and 2½ fathoms mud, the rushes at the entrance of the river will be seen, if the weather is clear, bearing from N. W. by W. to N. by E., and the mouth of the river about N. N. W. When the water deepens to 3½ or 4 fathoms, he is over the bar, which is about 6 miles in breadth, from 3½ fathoms on one side to the same depth on the other, and is most dangerous on the east side, being there hard sand. The lat. of the bar is from 29° 58′ to 29° 55′ N. lon. 48° 40′ to 48° 44′ E. To sail from Karak to Basra River and a fair wind.

Departing from Karak with a N. W. or W. N. W. wind, a ship should pass round the east end of Korgo, then haul to the northward with the flood tide, which sets here N. by E. or N. N. E., she ought then to stand up for Cape Bang, and the ebb tide will be of advantage if she can weather the Cape; if not, it will be prudent to anchor under lee of it in Gunowah Bay, where there is good ground in 7, 6, or 5 fathoms. With the first of next flood, a small stretch out may be made; and from Cape Bang to Bunder Dellim, or Delam, the coast may be approached to 6 fathoms in the night, or 5 fathoms in the day. How to proceed with a N. Westerly, or turning wind.

DELAM, situated in lat. 29° 55′ N., is a port frequented by the country vessels. With a N. Westerly or turning wind, a ship should from Delam keep close to the banks, working with the flood, which sets N. N. W. It is advisable in working to the westward, not to come under lat. 29° 40′ N. nor to the northward of lat. 30° N.; whilst in about 29° 50′ N., a vessel may be certain of being to the eastward of the bar, for to the westward, she cannot exceed its lat., so the lat. is in that case a guide; the whole dependence, however, must be on the soundings.

How to work into the entrance of Basra River.

After working across the banks till you judge yourself near the bar, the soundings in Koor Abdillah are an excellent guide, for there you will deepen to 20 fathoms when well to the southward, it will then be proper to tack, and in standing N. N. E. or N. by E. with the flood setting N. W. you will shoal to 4½ fathoms, then deepen to 15 fathoms in Koor Gufgah. After tacking from hence, and standing W. by S. or W. S. W. you will pass along the bar in about 4 fathoms, and afterward deepen in Koor Abdillah to 8 or 10 fathom; it will be proper to tack again to the eastward, passing the bar in 3 fathoms; if the flood is strong, you will weather Koor Gufgah, and instead of having deep water, you will have 3 fathoms on Meuvan Sand. You must then tack, and stand to the westward, and will probably have 3 and 2¾ fathoms mud on the bar, but ought to cross over till you deepen to 4 or 4½ fathoms in Koor Abdillah, and afterward, make short tacks across the bar; the rushes will then, soon be perceivable. Be cautious when the depth decreases in standing to the eastward, as the Meuvan Bank, which bound the channel on that side, is rather steep to.

Koor Abdillah is the westernmost branch of Euphrates River, having at its entrance an extensive bank and breakers, on each side of which are channels with 5 fathoms regular soundings in them. That on the S. W. side of the bank, is called by the pilots, Koor Boobian, but leads to Koor Abdillah, being only a branch of it. A ship in the night, should be careful not to get into this S. Westernmost channel, amongst the banks bounding the entrance of Koor Abdillah.

In entering Basra River, the rushes are discerned at 9 or 10 miles dsitance, but the pelicans are sometimes seen before the land, appearing on the banks in great numbers, resembling a white beach. The winds blow mostly down the river, all the year round, and when a northwester is violent, the atmosphere is obscured by the sand driven along before the wind.

The pilots not to be implicitly trusted.

Few of the pilots speak any other language than Arabic, and they are not altogether to be trusted, as they are liable to make mistakes in approaching the river; it is, therefore, prudent, to be attentive to the directions for approaching the bar and crossing over it, particularly to the soundings, which are the only guide. When on it in very clear weather, the high land of Remers or Ramus, is sometimes seen bearing N. E. by E. ½ E. *by compass*, distant 20 leagues. It is high water on the bar at 12 hours, on full and change of moon, and one hour later every 15 miles up the river; the distance from the bar to the town of Basra, is about 90 miles, therefore, the difference of the tides between the two places is 6 hours, so that it is high water, on full and change, at 6 hours off Basra-creek. The variation here in 1812, was 5° 15′ W. at the bar of the river.

To proceed up the River.

When you have crossed the bar, continue to work during the flood. In approaching the entrance of the river, you see nothing on either side but long bullrushes, then in 4 or 5 fathoms, keep the larboard shore a-board till you get well into the river, then work close over from side to side, till you approach Chillaby's Point, which is on the starboard hand, and known by the first plantation of date trees on that side the river; there are some scattered trees to the southward, but not worth notice.

Chillaby's Point.

Off Chillaby's Point, the water is deep, 12 fathoms mid-channel, and 7 fathoms close to the sand that projects from the point, but never come nearer it than 9 or 10 fathoms; opposite to this point on the western shore, there is a grove of trees, called Dorah. When round Chillaby's Point, keep nearest to the starboard shore; from this to Chubdah Island, you never stand farther over than to open the island with the point of the same name. From Chubdah Island to Barain, or until near Deep Water Point, keep close to the starboard shore, which is steep to. Between Chubdah Point and Deep Water Point, there are 5 islands close to the western shore; Chubdah is the largest, and planted with trees, the others small, and uncultivated. These islands ought never to be approached nearer than 4 fathoms at low water, but the shore opposite to them is bold, having 6 and 7 fathoms water, at the distance of 5 fathoms from the trees.

Deep Water Point, on the larboard shore, is reckoned half way from the bar to Basra, from whence the shore extends to the westward, and afterward to the northward, forming a great bight, with the Island Malah opposite to it on the eastern shore. Off Deep Water Point, 14 and 15 fathoms are within a few yards of the shore, but although the Island Malah has the shoalest water, it is better to borrow on it than toward Deep Water Point, where there are strong eddies, rendering it impossible to govern a vessel when once she gets among them. In keeping close to the Island Malah, attention to the soundings is requisite, for from 7 fathoms' the water shoals very quickly till you are past all the trees on the larboard side, which from hence are continued to Basra; but by the tombs, are thinner than any where else. Deep Water Point, and Malah Island.

When past the Island Malah, the river becomes narrow, and 2 or 3 tacks from thence will fetch Haffar River, which is ⅔ of the way up; here you may equally approach either shore, but Zaine Point, or the larboard side, has the shoalest water. Haffar River.

From Haffar to Sybelyat, (which is half way between the former and Basra) there is a sand bank projecting from the northern shore, nearly to the centre of the river, where a vessel has not above two cables length to work in, and 3, or 3¼ fathoms, is the depth in mid-channel. From Haffar to Abelkasal, or Abelkaseeb, and from thence to Chillaby's Island, 4 fathoms is the deepest water, continuing to keep nearest to the larboard shore. There are 2 Islands, the northernmost called Surajee, and the other Chillaby's Island: here the channel is very narrow, on account of these islands being nearly in the centre of the river; they are 5 or 6 miles in length, and when you pass the north end of Surajee, the mosque at the entrance of Basra Creek is discernible. Here you moor in 4, or 4½ fathoms, within a cable's length of the western shore; if the starboard anchor is placed to the northward, and the other to the southward, the outset from the creek will generally swing the vessel the right way. Chillaby's Island and Surajee. Basra anchorage.

BASRA, BASRAH, or BUSSORA, is a port which carries on a considerable trade with Muscat, and various parts of India, particularly in Arabian Horses, which are exported from thence. The factory is in lat. 30° 29½′ N., lon. about 47° 40′ E.; variation 5° 30′ W. in 1812; the difference of lat. between the town and the bar at the entrance of the river is about 34 miles. The town of Basra is situated on the principal branch of the Euphrates, generally called Basra River. Geo. site of the town.

## ARABIAN SIDE OF THE GULF.

CAPE MUSSENDOM, RAS-UL-GEBAL, (Mountainous Head or Cape) of the Arabs, was called Maceta by the Greeks, in the time of Alexander, situated in lat. 26° 21′ N. lon. 56° 38′ E. by chronometer from Muscat, is the N. Easternmost extremity of Arabia, and forms the western boundary of the entrance into the Persian Gulf. There is said to be deep water between it and its contiguous Rocky Islands, but the channels are too narrow to be navigable by ships, and the Cape is seldom or ever approached close, on account of strong currents rushing through among the islands, and the want of safe anchorage. Geo. site of Cape Mussendom.

From Cape Mussendom, the Arabian Coast turns sharp round in S. W. direction about 8 or 9 leagues to Cape Jedee, or Yedee, in lat. 26° 8′ N., and then it takes a more southerly direction to the village of Raumps, the mountains then receding backward from the coast, and the water shoaling toward it, which before was deep in the proximity of Cape Mussendom. Coast from thence to Cape Jedee.

RAUMPS, in lat. 25° 54′ N. about 4 or 5 leagues to the S. S. Westward of Cape Jedee, has a creek, protected by a bar with a high surf beating upon it, which forms a good retreat for the pirates of this village. Raumps.

Geo. site of Ras-ul-Khima

RAS-UL-KHIMA, in lat. 25° 47′ N., lon. about 56° 0′ E.* distant 7 or 8 miles to the southward of Raumps, is the chief town of an extent of piratical coast upward of 400 miles, stretching from Cape Mussendom to the Island Bahrein; and although this town, with the pirate vessels belonging to it, together with those of some other villages, were destroyed in 1809, by a British force sent from Bombay for this purpose, these pirates of the Persian Gulf, have nevertheless regained their strength, repeating their depredations, not only on their own shores upon defenceless vessels, but also infesting the coast of Scindy as far as the Gulf of Cutch.

The town stands upon a sandy spit, which projects from it in a N. E. direction; and parallel to this spit, about 2 miles off shore, extends a sand bank, with not more than 2½ fathoms on it at high water, but there is 3 fathoms inside of it, within a mile of the town. Round the spit, an inlet or creek extends in a S. Westerly direction to the back of the town, from whence it takes a direction inland to the S. Eastward. In this creek the piratical dows were secured; the bar at the mouth of it, extends from the point across to the main, having never more than 11 feet on it at high water, spring tides, the rise and fall being 6 feet.

Anchorage.

The ground is sand and shells, not very good anchorage; the best birth is in 6 fathoms, with the point bearing S. E. The Minerva in 6½ fathoms loose sand, had the town of Ras-ul-Khima bearing E. S. E. distant 4 miles, town of Raumps N. E. by E., town of Dsjesiret Umrah S. S. W. ½ W., and the extremes of the land from Cape Jedee N. E. by N. to S. W. by S., off the nearest shore 3 miles.

Dsjesiret Umrah.

DSJESIRET UMRAH, OR RED ISLAND, in lat. 25° 43′ N. distant about 11 miles S. W. by W. ½ W. from Ras-ul-Khima, is low, sandy, and of small extent, its western end being nearly joined to the main. The soundings are irregular, and the bottom loose and rocky; the Chiffonne frigate, at anchor in 3¾ fathoms loose ground, had the northern extreme of the land bearing N. E. ¼ N., Ras-ul-Khima E. N. E. ½ N., point of the island E. by N. ¼ N., and the western extreme of the town S. E. by S. off shore less than ½ a mile, being within range of shot of the fort, which is defensible against Arabs.

Other villages.

Between Dsjesiret Umrah and Sharga, there are 3 small villages, Murgaveen about 4 leagues S. W. by W. from the former place, and Aymaun and Fusht, nearer Sharga. The coast along hereabout, may be approached close in some places, but the soundings are irregular.

Geo. site of Sharga.

SHARGA, in lat. 25° 22′ N. lon. 55° 32′ E. is about 11 leagues S. Westward of Dsjesiret Umrah, but the coast forms a convexity between them. It is a small place, with several towers of defence, destitute of cannon, and the shore may be approached within 2 cables lengths by a frigate.

The piratical dows lie in a small lagoon to the westward of the town: along the coast a bank of sand is thrown up by the sea, which makes a good parapet for the Arab Matchlock men.

Abu Heyle.

ABU HEYLE, is a small place about 3 leagues S. W. of Sharga; and from Raumps to this place, the coast is low, planted in several places with date trees.

Geo. site of Ras Reccan.

RAS RECCAN, in lat. 26° 11′ N. lon. 51° 16′ E. is a projecting headland on the Arabian coast, about half way up the gulf; the coast between it and Abu Heyle, called by the Arabs the *Coast of Danger*, is totally unknown to Europeans. It is said to be fronted by coral

* Capt. J. A. Pope made it 57 miles west of the Great Quoin by chronometer, or in lon. 55° 38′ E. The lon. stated above, is from Capt. Sealy of the Bombay Artillery, who surveyed several places in the gulf.

banks in several places, and the prevailing northerly winds are unfavorable for navigating along it, until it be explored; and it *probably*, may be found not so dangerous as hitherto represented, if accurately examined, which is much to be desired.

KOOR HUSSAN, in lat. 26° 2′ N. lon. 51° 11′ E. by chronometers from Busheer, was visited by Lieutenants Eatwell and Frederick, in the Vestal Brig, in March 1810, and lies about 4 leagues to the S. S. W. of Ras Reccan; from which headland, the coast forms a deep concavity to the Island Bahrein, called Bahrein Bay, mostly filled up by an extensive sandy shoal, but leaving a channel between it and the eastern side of the bay, called Koor Hussan, where vessels may anchor in from 4 to 6 fathoms water, sheltered from all winds but those that blow from the northward. Geo. site of Koor Hussan.

Here are 4 small villages, Yamah nearest to Ras Reccan, the next Agulla, then Koor Hussan, and Zebarra near the south part of the bay, off which the water is shoal. Other villages.

The Vestal at anchor in 5½ fathoms soft ground off Koor Hussan, had the Island Bahrein in sight from the mast-head bearing W. ¼ S., distant about 9 leagues. The sand bank that fronts Koor Hussan, stretches across to the body of the Island Bahrein, according to the pilots account; but from Zebarra to that island, and from thence to Katif, like most of this extensive coast, is at present not known to Europeans. Anchorage.

The Scorpion Shoal, lies to the north of Ras Reccan, and the water deepens from 6 or 7 fathoms near that cape, to 17 and 18 fathoms near the shoal, which with the Crescent Shoal, has been already described.

KATIF BAY, was visited by Capt. Hamilton in the Brig Nautilus, in Dec. 1812, who made the north point in lat. 26° 36½′ N.* lon. 50° 12′ E. by run from the Persian coast. This bay extends a considerable distance inland, having in it the small island and town of Karud or Tarud; the town of Katif, being situated at the bottom of the bay, with some craggy hills to the southward, one of them called the Sugar Loaf, which bears from the anchorage at the north point of the bay *true* S. 16° W. When this bears S. W. or S. W. by W., the bay is open, and in entering it, keep near the north-west point, which is safe to approach, as the south-east point is fronted by a shoal. Having passed the N. W. point, steer for the Sugar Loaf till the island is bearing about W. N. W., and the Sugar Loaf S. W. or S. W. by S., then anchor in 4½ fathoms white sand and shells. Geo. site of Katif.

About mid-way between Katif and Cape Berdistan, the depths are from 45 to 50 fathoms, decreasing toward either shore.

RAS-UL-ZOOR, in lat. 28° 53′ N. lon. about 48° 16′ E. is the south point of a bay, formed between it and Ras-ul-Gillia, the northern extreme; both of which have reefs fronting them, and betwixt these, there is 4 fathoms water, and 3 fathoms in the bay, where a vessel might be sheltered from southerly winds. Between Katif and this place, the coast is unknown to Europeans, but it is thought to be barren and destitute of shelter, with soundings in most places decreasing regularly to the shore. Geo. site of Ras-ul-zoor.

RAS-UL-URHUD, in lat. 29° 20′ N. lon. about 47° 57′ E. is the S. Eastern extremity of the entrance into Graen Haven, distant about 12 leagues from Ras-ul-zoor; from the latter place, along this part of the coast, there are regular soundings of 6 and 7 fathoms near the main, increasing to 12 and 14 fathoms amongst the islands in the offing, but decreasing to 4 and 3 fathoms near the Island of Ohah, fronting Graen Haven. Geo. site of Ras-ul-urhud.

MULMARADAM ISLAND, in lat. 28° 48′ N., about 6 or 7 leagues to the eastward of Ras-ul-zoor, is the southernmost island fronting this part of the coast; Garrow Island, in Islands Mulmaradam,

* The old charts place Katif Town in lat. 26° 50′ N.

dam, Garrow, and Khubber.

lat. 28° 54′ N. lies 4 or 5 leagues to the N. E. of Mulmaradam; and Khubber Island, in lat. 29° 7′ N. lies to the N. W.ward of Garrow, all of them being thought safe to approach, with good channels between them; and there is a safe channel between these islands and the coast, leading to the entrance of Graen Haven, but the passage to the eastward of them is generally used by the Company's Packets, which frequent Graen Haven.

Geo. site of Graen.

GRAEN, OR GRAIN,* in lat. 29° 24½′ N. lon. about 47° 48′ E., is considered a secure haven in most winds, where ships lie sheltered in 5, 6 or 7 fathoms, to the westward of the village, which is situated on the southern shore. This haven stretches a considerable distance inland to the West and S. Westward of the village of Graen; but its shores, particularly the projecting points, are lined by reefs, which must be avoided in sailing into the haven. The shoal bank fronting the northern shore, projects a great way out, uniting with the shoal water that environs the 3 islands to the eastward of Graen, by which there is no passage between these islands and the north shore, except for small vessels.

Geo. site of Pherleechee.

FELUDSH, OR PHERLEECHEE, is the largest of these 3 islands, extending in a N. W. and S. Easterly direction between 1 and 2 leagues, the town being situated on the east side of the island, in lat. 29° 30′ N. lon. 48° 25½′ E., or about 8 leagues to the eastward of Graen. Adjoining to the S. E. end of Pherleechee, the small Island Ohah is situated, and off its N. W. end, the small Island Muchan. These islands break off the sea from Graen Haven, when the winds blow from eastward: the soundings near them on the South and S. W. sides, decrease to 3 and 2 fathoms, there being 9, 10 and 11 fathoms water in mid-channel between them and Ras-ul-urhud, which depths continue to the entrance of Graen Haven, then decrease to 8 and 7 fathoms, and to 6, 5 or 4 fathoms at the bottom of the haven.

Islands Ohah and Muchan.

Soundings.

Koor Boobian and Koor Abdillah.

From the Island Pherleechee to Basra Bar, shoal banks project far out from the western shore, and ships pursuing this track, must be cautious that the flood tide do not horse them into Koor Boobian, or Koor Abdillah, among the shoal banks of these 2 great inlets, situated to the westward of Basra Bar.

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## *DIRECTIONS to SAIL from the GULF of PERSIA, to the MALABAR COAST, and other parts of INDIA.*

To proceed down the Persian Gulf.

AS THE WINDS are generally favorable for sailing down the Persian Gulf, particular directions are not requisite. A vessel having cleared the river Euphrates, may steer a direct course to pass in sight of the Island Karak, and from thence to get soundings on the Bank of Berdistan. After passing over this bank, a course should be steered for the Island Busheab, taking care to avoid the reef off its western extremity in the night, or in hazy weather; when abreast of this island, she ought to steer to pass to the southward of Kyen, then between Polior and Nobfleur Islands, and on the north side of the Tumbs; then to the E. N. Eastward, passing Angaum Island at a moderate distance, and afterwards for Cape Koli; rounding the Quoins at any convenient distance as may be necessary, according to the prevailing wind; but it will always be prudent to pass them at a considerable distance, as the currents are strong, and the water too deep near these islands, and Cape Mussendom, for anchorage.

* The Gerra of Pliny.

In passing out of the entrance of the gulf, the Persian shore between lat. 26° N., and Cape Jask, ought not to be approached nearer than 30 fathoms in the night, nor under 20 fathoms in the day, on account of Kohumbarek Shoal projecting out 2 or 3 miles from the coast, and situated about 5 or 6 miles to the W. N. Westward of the Cape.

DURING THE NORTHERLY MONSOON, from September to April, ships leaving the Persian Gulf, should if bound to Surat, Bombay, or other northern ports on the Malabar coast, steer from Cape Jask along the Guadel coast, keeping at a considerable distance from it, to avoid light winds or calms, that may be occasioned by land or sea breezes near the shore. And from thence toward India

When the meridian of Cape Monze is approached, it will be proper to keep away to the S. Eastward, and cross the gulf of Cutch, and pass the Guzarat coast at any convenient distance. Having passed Diu Head at the distance of 12 or 14 leagues, a direct course may be steered for Bombay if bound there, or toward the high land of St. John, when bound to Surat. During the northerly monsoon.

Ships bound to the southern parts of the Malabar coast, or other ports, in the bay of Bengal, or farther eastward, should proceed from Cape Jask, nearly as directed above; it is not necessary that they approach the Guadel and Guzarat coasts, so close as vessels bound to Bombay or Surat; but they ought to keep so far to the northward, as enable them with N. Easterly or N. N. E. winds, to make the high land about Barsalore, and pass inside the Laccadiva Islands.

During the strength of the northerly monsoon, a passage may generally be made from Basra in 26 or 28 days to Bombay, and from Muscat in 10 or 12 days.

DURING THE S. W. MONSOON, the egress from the Persian Gulf is equally favorable. From March to September, vessels leaving the entrance of the gulf, if bound to the bay of Bengal, or eastern parts of India, may shape a course to pass to the westward of the Laccadiva Islands, then through either of the channels between them and the Maldivas; or they may steer to pass inside of the former islands, and along the edge of soundings on the Malabar Coast to Cape Comorin. When circumstances permit, the track to the westward of the islands seems preferable, for there, the monsoon generally blows steady without rain, but inside the islands, near the coast, hard squalls, with rain and cloudy weather, may be expected during the whole of the S. W. monsoon. To sail from the Persian Gulf to India, during the S. W. monsoon.

A ship bound to Bombay in this season, ought to get into the lat. of the Island Kanary, at the distance of 30 or 40 leagues from the land, then steer directly east on its parallel for the entrance of the harbour. In this monsoon, few other ports on the coast are frequented by ships, most of them being open roads, unsafe, and exposed to the high sea that rolls in upon the shore. A passage from Muscat to Bombay may be made in 7 or 8 days, in this monsoon.

Surat road, is very unsafe when the S. W. winds are in force, therefore ships bound to this port, do not depart from the Persian Gulf until the beginning of September; at this time a course may be steered to pass Din Head, about 12 or 13 leagues distant, observing to keep at a considerable distance from the Guadel Coast. The winds may be expected variable from westward, with light breezes or calms at times, and when the Guzarat Coast is approached, showers of rain may be experienced. When abreast of Diu Head, a ship should get into lat. 20° N., then steer east for the high land of St. John in the same lat. taking care not to get too far north toward the banks, nor under 10 or 12 fathoms in the day, or 13 fathoms in the night, towards the shore about St. John; as the reef and foul ground project out above 2 leagues from the coast, having 10 fathoms close to it. Having descried the land, a course should be steered along shore for Surat Road, not

coming under 11 or 12 fathoms, till abreast of Demaun; from hence to Surat River, the coast may be approached to 7 fathoms at high water, or 4½, or 5 fathoms at low water spring tides.

## *COAST of GUZARAT, from GOAPNAT POINT, to DIU HEAD, and the GULF of CUTCH.*

Coast from Goapnat westward.

GOAPNAT, OR GROAPNAUGHT POINT,* in lat. 21° 12′ N. is about 11 leagues to the westward of the coast called Swallow, on the north side of Surat River; that being the breadth of the entrance of the Gulf of Cambay, which is formed between these places. A dangerous shoal projects near 4 miles from the point to the eastward, and stretches about 3 leagues along the coast to the northward, having 16 fathoms within ½ a mile of its southern extreme; but on the north and east sides, it is not so steep, the depths there, decreasing more regularly on a sand bank. Goapnat Point, may be seen at 5 or 6 leagues distance in clear weather, and a little to the westward of it there is a Hill Fort, called Jaunmair. From this point to Mowah Bay, the distance is 20 miles, the coast clear to 10 fathoms, within a mile of the shore, but the soundings are no guide, as the depths differ very little from 1 mile to 3 leagues off. There is little shelter on this part of the coast, against westerly winds: in Mowah Bay the anchorage is bad, the bottom being sand from 7 to 10 fathoms, and with the flood tide, a vessel must lie, having a reef of rocks right astern.

Searbett Island.

SEARBETT ISLAND, in lat. 20° 55½′ N. and 1° 8′ W. from Vaux's Tomb, is 16 miles from Mowah Point, the coast between them forming a straight line, with detached rocks in some places, from ½ to ¾ of a mile off shore. There is a channel round the S. W. end of this island, through which vessels may pass, and be sheltered under the north part of the island from the S. W. monsoon, by nearly shutting in the opening of the west channel. From the east end of it to the main, the water is shoal, but there is anchorage in 4 to 6 fathoms soft ground, under the east end of the island, or on the north side of the rock that lies at a small distance from it. This island, is the receptacle of all the pirates on the coast, where they procure good water, and some grain. It is high water at 1 hour 30 minutes, on full and change of the moon, the rise of tide 10 feet.

Jaffrabad.

JAFFRABAD, in lat. 20° 5′ N., about 6 or 7 miles to the W. S. W. of Searbett Island, has the best river on the coast, there is no bar, and the entrance is easy; although shoal, vessels will receive no damage by lying in the soft mud at low water, as they are well sheltered. The town is about a mile up the river, surrounded by a wall; next to Diu, it is the most considerable place for trade on the coast of Guzarat.

Rajapour.

RAJAPOUR, is distant from Jaffrabad about 13 miles to the westward, the coast between them safe to approach within ½ a mile. There is a fort on the point of Rajapour, which is possessed by the pirates of this place, who prey on small defenceless coasting vessels.

* Named from a place of worship built there, dedicated to the Hindoo Deity Goapnat; around it there is a copse of bushy trees.

NOWA-BUNDER, another nest of pirates, lies about 3 leagues farther to the westward, and is in one with a high hill inland, called Junaghur Hill, bearing N. 9° E. There is a creek at this place where they haul up their boats, and small vessels may moor in 3 fathoms, under the point, and be sheltered from the S. W. monsoon. Nowa-bunder

DIU CASTLE, in lat. 20° 43′ N. lon. 71° 14½′ E. or 1° 37′ W. from Vaux's Tomb, Surat Road, by chronometers, is 4 or 5 miles from Nowa-bunder. The island belongs to the Portuguese, and is 6½ miles long from east to west, but only about 1½ mile in breadth, and on the east end of it the town and castle are situated. The water is brackish, excepting that procured during the rainy season, which is kept in tanks or reservoirs for general use; provisions are plentiful, and although the island appears unfit for cultivation, the market is well supplied with vegetables from the main. The town is well fortified, surrounded by a wall, with towers at regular distances. On the east side of the castle, there is depth sufficient for a 74 gun ship, within 5 or 600 yards of the wall, if she come not too near a rock above water, which joins a line of rocks stretching from the castle. Geo. site of Diu Castle, the Island, and Road.

To the eastward of the rock above water, there is a bank on which the sea breaks at low tide, but between them there is a channel with 4 or 5 fathoms: the best anchorage is within this bank and rock, in 5 to 3 fathoms.

The channel between the island and the main, is only navigable by fishing boats at half tide, the western entrance having 4 or 5 feet on the bar at low water, and is protected by a fort.

DIU HEAD, the southernmost point on the coast of Guzarat, is in lat. 20° 42′ N. lon. 1° 45′ W. from Vaux's Tomb, or 71° 6½′ E. of Greenwich, and distant about 2 miles from the west end of the island. On the east side of the head there is a bay or harbour, where small vessels may lie sheltered from westerly winds, in from 3 to 5 fathoms. Geo. site of Diu Head.

The coast of Guzarat, from Goapnat Point to Diu Head, is generally bold, safe to approach, of moderate height, but rather low in some places; trees, and the appearance of cultivation are very seldom perceived, and it is destitute of a good harbour where a ship could ride with safety during a gale of wind. The depths along it, are nearly equal at different distances from the shore, the soundings therefore, do not give sufficient warning, nor denote the distance off. Coast to the eastward,

From Diu Head, the coast takes a direction about W. N. W. ½ N. 8 or 9 leagues, then N. W. by W. and N. W. to Gigat Point, the S. Western extremity of the Gulf of Cutch, the distance between them being about 46 leagues. The land contiguous to the sea in this space, is generally of moderate height, but high in the country. Along the coast the soundings are regular, from 34 or 36 fathoms 7 or 8 leagues off, to 10 or 12 fathoms near the shore, which is bold and safe to approach, but contains no safe harbours except for boats or small vessels. There are many towns on this part of the coast, from some of which, they export cotton wool, and other articles, to Bombay; but several of them are inhabited by a predatory race, who live on the plunder obtained from small trading vessels and boats, which are assaulted by these pirates. and westward of Diu Head.

JUGGAT, OR GIGAT POINT, is in lat. about 22° 20′ N. lon. 69° 16′ E. or 1° 49′ W. from Diu Head; the land about it moderately elevated. To the N. Eastward of this point, the Islands Artura and Bate are situated; between these the harbour of Bate is formed, which is well sheltered from all winds. The entrance to it is in lat. 22° 31′ N. where directly to the northward of Artura about a mile distant, lies the bar, having on it near high water, 3¼ and 3½ fathoms, rocky bottom; and outside of it at ½ a mile distance, 14 and 16 fathoms. A reef projects out from the N. E. end of the island Artura, and a little farther in the same direction lies the high rocky Island Soomia; betwixt which, and Gigat Point, the adjacent land, and Bate Harbour in the entrance of the Gulf of Cutch.

the reef just mentioned, is the passage into the harbour, being about a ¼ of a mile wide.

How to sail into it. A vessel bound into Bate Harbour, should round the north end of the Island Artura, about a mile distant, keeping Bate Flagstaff on with the N. E. sandy point of Artura in crossing over the bar; the water will deepen afterward to 5 and 6 fathoms, in standing toward the south point of Soomia; she must borrow on this island, to avoid the reef projecting from Artura, in passing between them, where the depths are from 4 to 7 fathoms, rocky bottom. When through this passage, a direct course to the E. N. Eastward should be steered toward Bate Castle, borrowing a little on the starboard side; the depths will be found irregular from 7 to 4, or 3½ fathoms. Abreast the castle, about mid-channel between the islands, there are 6 and 7 fathoms in one place, and 3, 4, and 5 fathoms around; the bottom mostly rocky, and uneven, throughout the harbour.

Geo. site. The lat. of Bate* Castle is 22° 28½′ N., lon. 69° 20′ E. by observation. Variation 1° 23′ W. in 1803. The rise of tide is 14 feet, and flows to 12 hours on full and change of moon.

## *COAST of INDIA, from BOMBAY to SURAT RIVER, with SAILING DIRECTIONS.*

Directions to sail from Bombay to Surat. FROM BOMBAY to Terrapore, the coast may be approached by a large ship to 8 fathoms in fine weather, and in some parts to 6 or 7 fathoms, but under 5 or 6 fathoms, the bottom is frequently rocky between Terrapore and Demaun; the foul ground of St. John extends a great way out, and should not be approached nearer than 12 or 13 fathoms, for within these depths, there are overfalls in some places, the bottom rocky and unfit for anchorage.

When abreast of Demaun, and from thence to Surat, the coast may be approached to 5 or 6 fathoms at low water, but in standing to the westward, a ship ought not to deepen above 17 or 18 fathoms toward the banks; when within 3 leagues of Surat Road, it is proper to keep in 8, 9, and 10 fathoms, taking care not to stand off above 5 or 6 miles.

With a contrary wind, ships working between Bombay and Surat, to benefit by the tides, must not stand far from the coast, but work within 3 or 4 leagues of it: they will be obliged to anchor when the tide is against them, except on the neaps, a ship that sails well may sometimes hold her own, by stretching well out in the offing, and taking advantage of any favorable slants of wind which may happen.

A ship bound from Bombay to the northward, should leave the harbour toward the latter part of the ebb, that she may get to the westward of the reef by the time the flood makes, which will be favorable for proceeding to the northward.

Mayhim Road. To anchor in Mayhim Road, keep the mouth of the river well open, with the church on the north side of the entrance E. N. E., where a vessel may lie in 6 fathoms soft ground, but with the church bearing east, hard ground extends out a great way from the land on the north side of the river; from the extremity of this hard ground, Bombay light-house is open with Malabar Point, the church then bearing east.

On the bar of Mayhim River, there are 2 and 3 feet at low water, and about 2¾ fathoms

* This place is of considerable strength, and a rendezvous for the pirates. H. M. Frigate Fox, the Teignmouth and Ternate, Bombay cruizers, were sent on an expedition here, in April, 1803; they burnt about 30 of of the pirate boats and vessels, made an attack on the castle by landing a party of men with some guns, and by firing on it from the ships, but were repulsed with some loss.

at high water spring tides; small vessels wishing to proceed over it, should keep Mayhim fort and church in one, till the ruins of a church is on with a little nob or hummock in the back land, bearing about N. E., then steer directly for it, to avoid a reef of rocks projecting from the fort to the northward, and a great way to the S. Westward; when the church is brought well open with the fort, they may haul in for the Bunder, or Custom-house, which is situated between them, and anchor in 2 and 2¼ fathoms at low water. To sail over the bar toward the town.

VERSAVAH FORT, in lat. 19° 7′ N., is about 7 miles to the northward of Mayhim Road, a vessel passing between them should not come under 6 or 7 fathoms, for under 5 fathoms the bottom is rocky; the coast generally is low, but inland the country is mountainous. The river of Versavah is a salt water river without any bar, having 2¾ and 3 fathoms in the entrance; the channel is close to the fort, and at this place not above 150 yards wide, being contracted by the shoal which stretches from the village along the eastern shore, and extends nearly to the point at the west side of the entrance on which the fort is situated. Off this place, there are several rocky patches; that called Versavah Rock, lies to the westward of the point, and has 5 fathoms close to it at low water, and 3½ fathoms inside, between it and another rock, which is always above water. Inside of this rock lies Versavah Island, which is small, and joined to the point by a reef of rocks, dry at half tide. There is another shoal of rocks about a mile S. W. from the fort, having only 2 feet on it at low water, between which and the island and other rocks to the northward, is the channel leading to the river. It is high water here at 12¼ hours, on full and change of moon, the rise of tide 16 feet. Versavah and the adjacent coast.

BASSEEN RIVER, in lat. 19° 18′ N. and 10 or 11 miles from Versavah, has shoal water extending a great way out from it; the coast between these places is rocky under 5 fathoms, and should not be approached close, as some of the rocks lie 1 mile from the shore. The fishing stakes are placed a great way out, and ought to be avoided in the night, by vessels working along shore.* Basseen River.

Between Versavah and Basseen, there is the village, and the River Murvah, navigable only by boats.

A vessel bound into Basseen River, before coming into 5 fathoms, should bring the south steeple of Basseen on with the first Little Peak to the southward of the Great one, or that steeple E. ½ S., then stand in direct for Puspear Rock; when near this, she ought to edge away round the southern side of it, until it bear N., or N. by W., then steer over direct for Deravee Battery on the starboard shore. If a vessel is to proceed to the town of Basseen, (which is several miles up the river) she ought after passing to the southward of Puspear Rock, to keep close along the northern shore, till abreast the fort, for the centre of the river is occupied by an extensive bank, nearly dry at low water; and to the westward of Deravee Battery, a reef of rocks projects out nearly to the meridian of Puspear Rock. To the southward of this rock, there is a swatch of muddy ground, which divides the bar into two parts; the least depth on it at low water spring tides, is 1 and 1¼ fathoms, the rise about 17 feet perpendicular, and flows to 12½ hours, on full and change of the moon. How to sail into it.

To the N. W. of Puspear Rock, a reef of rocks projects out to 5 fathoms; between this place and Arnoll Island, the distance is about 3 leagues, the shore rocky, and should not be approached under 8 fathoms by a large vessel. Angassee Bay, on the north side of Arnoll Island, is full of shoals, and only navigable by boats or small vessels: the channel is between Arnoll Island.

* Both to the northward and southward of Bombay, off Mayhim, Versavah, Basseen, Choul, &c. they are sometimes placed as far out as 8 or 9 fathoms: they are laid down by the fishermen at the beginning of the fair season, and taken up before the S. W. monsoon sets in. This is done by pressure, being forced into the ground on the falling tide, by boats affixed to them, and dragged out of it in the same manner with the flood. Each stake is valued at 50 or 60 rupees; ships should, therefore, be careful not to destroy the labour of these industrious fishermen.

the island and main, for a reef of rocks extends across the mouth of the bay. There is a fort on the island, which is nearly 1 mile distant from the main; the lat. 19° 28′ N.

Terrapore and the coast to St. John.

TERRAPORE POINT, in lat. 19° 50′ N., bears nearly N. by W., from Arnoll Island, distant 7½ leagues; between them the coast is rocky, not to be borrowed on nearer than 8 fathoms, for the foul ground projects from the point nearly to that depth. On the N. side of it the town and bay of Terrapore are situated, in which there is anchorage to the N. W. of the town, but the bottom is mostly rocky; particularly in the southern part of the bay, which is full of rocks and shoals, extending from the point to the N. W. and northward, abreast the town. The Peak of Terrapore, situated 4 leagues to the S. E. of the town, and a little inland, resembles a castle when seen from the N. Westward, being composed of rugged rocks upon the summit of a hill. Valentine's Peak, about 4 leagues farther to the northward, is a very sharp pyramid; but fronting the sea, the coast is generally low, and covered with trees. Between Bombay and Terrapore, the tides set nearly in the direction of the land, the flood a little toward it, and the ebb a little from it, about S. S. W.

Reef and High Land of St. John.

HIGH LAND OF ST. JOHN, situated about 3 leagues inland, has a regular appearance, sloping to the northward and southward from the central part, which is a round mount, and set always for the body of the high land. It is in lat. 20° 2′ N. 6 or 7 miles east from Bombay Castle, but the coast abreast, is 3 or 4 miles to the westward of the same meridian. An extensive reef with rocky ground fronts this part of the coast, projecting out from it 7 or 8 miles abreast the high land, stretching from Danno River, a little northward of Terrapore, nearly to Demaun.

To pass round the reef and foul ground,

When the body of the high land of St. John is brought to bear E. N. E., a ship is then approaching the southern part of the foul ground, and ought not to come under 12 or 13 fathoms, for the rocky bottom projects out in some places to 12 fathoms. With the body of the high land bearing from E. N. E. to E. S. E., a large vessel ought not to come under 13 fathoms, toward the verge of the foul ground; for she might be liable to lose her anchor among the rocks, if drifted on the edge of the reef during a calm, and obliged to anchor there, where the tide runs strong in eddies.

When the body of the high land of St. John, is brought to bear E. S. E., a ship is then to the northward of the extremity of the reef, and may stand in to 10 or 11 fathoms, at tacking from the shore, but not nearer than 10 fathoms till nearly abreast of Demaun, for the coast continues rocky as far out as 8 or 9 fathoms, until that place is nearly approached.

And afterward to Surat Road.

When round the foul ground of St. John, a ship should steer to the N. Eastward to get near the coast; in working, she may stand in to 10 or 11 fathoms, and off to 18 or 20 fathoms, but in standing far over to the N. W., should she begin to shoal on the southern part of Malacca Banks, it will be prudent to tack and stretch over for the coast, keeping afterward within a moderate distance of it, in proceeding toward Surat Road.

Demaun River;

DEMAUN, in lat. 20° 22′ N., belonging to the Portuguese, is known by two square steeples, and the white appearance of the buildings; also by a hill to the northward, composed of four hummocks, called Demaun Hills, and farther northward, a round fortified mount very conspicuous standing by itself on the level plain, called Poneira, or Panella Hill. On the south side of the river, about 2½ miles distant, Enderghur Fort is situated on a hill,

The road;

which is another mark to know this place. Ships may anchor in Demaun Road in 8 fathoms, with the river open, bearing E., and Panella Hill N. E. ½ N., off the town about 4 miles. To stand over the bar into the river, keep the flag-staff of the northern fort E. ½ N.,

And how to sail over the bar.

or the entrance of the river due east, and steer in direct for it; the depth at low water spring tides, is 2 feet on the bar, and 18 or 20 feet inside between the forts at the town, where the bottom is soft mud. The bar is very flat, mostly hard sand, except from the north point

of the river, rocky ground projects a great way out. There is never less in common springs than 3 fathoms, at high water on the bar, the rise of tide being 17 or 18 feet, and flows to about 1½ hour, on full and change of the moon, but in the offing the flood continues till 2¾ hours.

Provisions and vegetables are plentiful and cheap here: it is an excellent place for small vessels to remain during the S. W. monsoon, or to receive repairs if needful, the country being well stocked with ship timber. Many ships from 500 to 900 tons burden, have been built in this river. Refreshments.

OMERSARY RIVER, is distant 6 or 7 leagues from the former, having a dry bar at ⅔ ebb; a small vessel bound into this river, should bring a high white building inland at Pardee, to bear E. S. E., then steer in with the entrance of the river open; when Panella Hill bears E. by N., she will be inside the bar, and in the entrance of the river she may anchor, when the land to the northward is shut in with the point on the same side. Omersary River.

BULSAUR RIVER, is distant about 2 leagues farther northward, in lat. 20° 34½′ N., having 2 or 3 feet on the bar at low water spring tides, the rise about 18 feet perpendicular, and flows to 1¾ hour, on full and change of moon. A vessel proceeding into this river, ought to bring the northernmost tree, or Grove of Cossumba, to bear E. by S. in one with the south point of the entrance, and may then steer directly for it with safety. Outside the bar, about ½ a mile from it, there is a rocky bank with 6 feet on it at low water; and inside between them, 12 and 13 feet, soft ground. In the river there are 7, 8, and 9 feet at low water. Bulsaur River.

GUNDAVEE RIVER, is distant 8 miles N. by W. from Bulsaur River, having a bar above a mile from the entrance, with 3 and 4 feet on it at low water. To go into it, bring two palm trees, called Mender Tree, to bear E. N. E., then steer over the bar with this bearing, for the shore to the northward of the entrance, taking care to avoid the north end of the south sand, on which fishing stakes are sometimes placed. When a flat bush resembling the top of a barn is brought to bear S. by E., steer for it, and anchor close within the south point of the river, or outside of the entrance close to the northern shore. It is high water at 2 hours, on full and change of moon, the rise of tide 19 feet. Gundavee River.

NUNSAREE RIVER, bears from Gundavee River about N. N. W., distant 5 leagues; it is wide at the entrance, but difficult of access, on account of the undulating channel among the banks, which has generally 3 or 4 feet in it at low water spring tides. A small vessel bound into it should bring a round bushy tree on the south side the entrance, to bear E. N. E. and steer for it until the southernmost trees on Bansee point bear N. N. W.; she will then be close to the south point of a sandy island, and must steer along the east side of it, keeping Bansee point N. N. W. until it is closely approached, where she may anchor; or steer along the point till the bushy tree bears E. S. E. ½ S., then stand across the river towards it, and anchor very close to Nunsaree Point.* Nunsaree River.

Between Demaun and Surat River, the land near the sea is low, and covered with trees; General description of the coast.

* Between Nunsaree and Surat Rivers, there is another called False River. These rivers which have been described, are only frequented by boats and small vessels, and their channels by the shifting of the sands are liable to alter; it may therefore, seem of little utility to have noticed them so particularly; but it may probably sometime happen, that a storm will overtake a ship on this part of the coast, and force her to run for the nearest river, to prevent being driven on shore. If this is attempted it ought to be near high water, to afford a chance of succeeding. Demaun River is the safest and most favorable for such purpose. The Hornby of 700 tons burthen, and other smaller ships, were saved by running at the last extremity into this river, when encountered by sudden storms on departing from Surat Road in the month of May.

and in some places, particularly contiguous to the rivers, it is inundated during high tides in the stormy season.

To proceed along it from Demaun to Surat Road.

When round the foul ground of St. John, and abreast of Demaun, a ship ought to keep along the shore for Surat Road, observing not to stand farther off than 2½, or at most 3 leagues from it, nor to deepen above 14 or 16 fathoms; she may in working, stand to 5 or 6 fathoms on the soft bank lining the shore, but in case of anchoring at high water well in, to benefit by the first of the following flood, it will be prudent not to do this under 7½ or 8 fathoms in spring tides, the water sometimes falling 19 or 20 feet perpendicular. In 1788, bound from China to Surat in the Gunjavar, a large ship drawing 21 feet, belonging to Chillaby, a respectable Mahomedan Merchant of the latter place, we anchored in 6½ fathoms, and grounded in the soft mud at low water.

With Panella Hill bearing about E. ½ N., there is a narrow spit of sand extending a great way out, with different depths on it from 8 to 13 fathoms, called Panella Spit: this may sometimes be a guide in the night when passing at 5 or 6 miles distance from the shore, if the lead is kept going, as the water will shoal suddenly on it in crossing, and soon return to the former depth when over it. Having passed 3 or 4 leagues to the northward of Panella Hill, a ship should steer along shore, in soundings from 7 to 9, or 10 fathoms; but in working, should she stand too far out, so as to get a cast of hard ground, or shoal on the edge of the Malacca Banks, it will be prudent to tack instantly toward the land. Being within 4 or 5 leagues of Surat Road, she ought to work between 6½ or 7 fathoms toward the shore, to 9 or 10 fathoms in the offing, as the channel then becomes more contracted; 9 or 10 fathoms is a good track with a fair wind.

Geo. site of Vaux's Tomb.

VAUX'S TOMB, on Swallow Point, north side the entrance of Surat River, is in lat. 21° 4½′ N., lon. 72° 5 1½′ E. The anchoring ground for large ships in Surat Road, is from 7 to 8 fathoms at low water, in lat. 21° 0′ N. or 21° 1′ N. with Vaux's Tomb bearing N. ¼ E. to N. ½ E., and False River entrance E. by S. to E. S. E. very soft ground. Here, on the springs, the tides run very rapid, particularly the ebb, about 5 knots per hour; but farther in, where small vessels lie near the bar, in 4 or 5 fathoms at low water, with the tomb N. ¼ W. they do not run with such velocity.

Anchorage in Surat Road;

and description of the bar and river.

It is impossible to direct a stranger how to proceed over the bar into Surat River, for the sands are almost continually changing, by which *new* channels open, and the *old* ones are shut up. Formerly, that called Domus Channel was the deepest, and generally used by ships; which took a direction on the east side of the banks, toward the village Domus, situated on the eastern shore, but it is now filled up, being only navigable by boats at half tide. The proper channel over the bar at present, is between the sand that projects above a mile from Swallow Point, forming the north side of the bar, and other extensive sands, which fill the middle of the river, and the eastern shore. After turning round the extremity of Swallow Sand, the channel takes a direction to the northward, close along the western shore of the river, where it becomes much deeper, and more safe than between the sands outside. Although this is the proper channel to enter the river, it is narrow, and at low water spring tides, there is not depth sufficient for a small boat between the dry sands near the bar, which to those passing outward, have a dreary aspect, being elevated 12 or 14 feet on each side of this contracted channel: boats passing down with the latter part of the ebb in this narrow gut, are carried along very speedily, by the water rushing through it with great violence, but being very shallow, they are liable frequently to touch the bottom, when the Lascars or sailors acquainted with the river, always leap out to support the boats and prevent them from upsetting. The distance from the bar to the city of Surat, is about 6 leagues; near two thirds of the distance, there is a continued chain of banks, many of them dry at half tide, with very small depths at low water, in the channels between them. Above Omrah, and near the city, the river is more contracted, with deeper water. Surat

Geo. site of Surat.

Castle is in lat. 21° 11′ N., lon. 73° 5½′ E., or 8 miles east from Bombay Castle by chronometers. In the road, it is high water on full and change of the moon, about 4 o'clock. Variation 0° 30′ W. in 1791.

In Surat Road, and in the entrance of the Gulf of Cambay, southerly winds and blowing weather set in much sooner than at Bombay. It is considered dangerous for ships drawing much water, to remain in the road after the middle of April, for in this month and early in May, smart southerly winds frequently blow during the springs, particularly in the night, with the flood tide. These winds produce a considerable sea, which by the strength of the tide, strikes forcibly against a ship, causing her to drive and bring both anchors a-head; this is also, sometimes occasioned by the strong tide lifting up the stern cable against a ship's heel, causing her to sheer obliquely to the stream, until she brings both anchors a-head. It is therefore, advisable, when a ship is detained in Surat Road late in the season, to keep at single anchor with a good cable down, sighting it at every convenient opportunity; by so doing, she will ride better in blowing weather, than if two anchors were down, and should circumstances make it necessary to cut or slip, only one anchor will be left on the ground. Storms liable to happen late in the season.

At such times, it is prudent to keep a pilot on board, that he may carry the vessel, if small, into the river, should a storm be apprehended; or to Gogo if it seems more eligible, where she will be sheltered by the reef and Island of Peram. In some storms that happened late in April and early in May, several ships have been lost by remaining too long at their anchors, when the wind had veered round to the westward, and prevented them from weathering Swallow Point.*

The approach of a gale in these months, is sometimes indicated by dark cloudy weather, gloomy and black to the S. Eastward, with lightning and faint variable breezes, mostly from southward; with these indications, a ship should ride at single anchor, in a state of preparation for severe weather, with a good fore-sail, and storm stay-sails bent. Some ships lie with topmasts struck, the fore-sail and storm stay-sails being sufficient to run with, over the bar, or to Gogo. Indications of their approach.

## *GULF of CAMBAY; BANKS near the ENTRANCE, and DIRECTIONS from SURAT BAR to the NORTHWARD.*

THE HEAD, or northern part of Malacca Banks, should never be approached with an ebbing tide; being steep to, the soundings give no warning, and were a vessel to take the ground here, she would be overset masts downward in an instant, by the rapidity of the tides. Malacca Banks very dangerous.

* In the heavy storm that happened on the 20th of April, 1782, several large and small ships were moored in Surat Road; some parted their cables, were driven on shore, and went to pieces; others held fast, but rolled away all their masts by the heavy sea; three of those lost, belonged to Chillaby, one of them completely laden for Basra, called Fatty Bumbarack, rolled away her masts, and foundered, when the wind had veered and was blowing hard from the land; occasioned by her labouring between the wind, tide, and high cross sea, from southward and westward: excepting one Lascar, (whom I have sailed with,) all the crew of this ship perished. She was a strong vessel, with a valuable cargo on board. Since 1782, no such heavy storm has happened in April, at Surat, nor even in May, although some gales have been experienced in the latter month.

Easternmost

The easternmost danger of Malacca Banks is in lat. 20° 56′ to 21° 1′ N. about 5 or 6 miles from Surat Bar, having 1 and 2 fathoms on it at low water. Vaux's Tomb bears from it N. 50° E.

and south-easternmost dangers.

The south-easternmost danger, dry at low water, is in lat. 20° 50′ N.; the ships in Surat Road bearing from it N. 47° E., just discernible from the deck of a small vessel when close to it. About 3 or 4 miles directly west from this, there is another dry bank; and from the latter, shoal water extends about 3 leagues to the southward, generally from 3 to 5 or 6 fathoms. To the southward of lat. 20° 30′ or even 20° 33′ N., there appears to be no danger on the tails, or southern extremities of these banks.

North-easternmost danger.

The north-easternmost danger or head of the Malacca Banks, is in lat. 21° 10′ N. distant about 5½ miles from the shore of Swallow, the channel between it and Swallow Bank is about 3 miles broad, this shore bank projecting out 1½ mile. These are sometimes called the *inner* and *outer* sands of Swallow, and are both dry at low water.

Goapnat Bank, or north-western most danger.

From the north-easternmost danger, or outer sand of Swallow, the distance is 10 or 11 miles due west to the *dry* bank called Goapnat; the northern limit of shoal water extending nearly in a direct line between them, having 17 or 18 fathoms close to it. Goapnat Bank has 10 fathoms within 200 yards of the dry sand at half tide, and joins to the N. Western extremity of the Malacca Banks, which is distant about 8 miles farther to the westward; from hence, these banks extend southward to lat. 20° 40′ N., where there is 1 and 2 fathoms about 5 miles west from the meridian of Goapnat Point, which is thought to be the S. Westernmost danger. The whole of the Malacca Banks, (whose exterior boundary has been described) are joined together by shoal water, without any safe channel between them.

South-westernmost limit of these banks.

To sail from Surat Road to Broach.

From Surat Road, when bound to the northward with the flood, a course about N. W. will be necessary, which will lead between Swallow Bank and the Head of the Malacca Banks, in 13 or 14 fathoms, or you may keep about 3 or 4 miles from the shore in soundings from 10 to 13 fathoms, which will lead through the fair channel, in passing between them. When Cutcheree Tree bears E. by N. (known by a large single brab tree on a low point) haul out W. by N. until Bogway Point bears N. E. ½ E., Donda E. by N. ½ N., and Cutcheree Tree E. by S. ¼ S., you will then be clear to the westward of Goolwaller Sand, in soundings from 10 to 14 fathoms, and ought to steer N. by W. for Broach Road.

Bogway Sands.

The sands off Bogway, extend about 5 miles from the shore, and are called Goolwaller and Bogway Sands; between them and the main, there is a channel, through which the small coasting vessels pass, in 3 and 4 fathoms water, but in the night, or in a large vessel, it is advisable to keep well out to the westward of these sands. From the land of Swallow to Broach Bar, a continued bank extends along the shore, which at Broach River's entrance projects out about 5 miles.

Broach Bar, River, and anchorage.

The bar of the river, is in lat. 21° 35′ N., and Broach Point, about 4 miles farther to the northward, is 5 miles west from the meridian of Vaux's Tomb. A vessel may anchor off the bar, with Broach Point N. by E. ¼ E., distant 4 or 5 miles, Peram Island W. ¼ N., in 6 fathoms at low water.

The tide flows here, to about 4¼ hours on full and change of the moon, velocity 6 knots per hour, rising nearly 30 feet perpendicular. On the north side of the river, a great way up, the town of Broach is situated; vessels of considerable burden, may proceed to this place, as the channels contain deep water in many places, but are too intricate to be navigated without a pilot.

On the east side of the gulf, the flood tide sets about N. by E. and the ebb S. by W. except where their direction is altered by the form of the sands.

To sail from it to Jumbaseer Road.

From Broach Bar to Jumbaseer Road, in lat. 21° 49′ N., a flat, dry at low water, projects 1½ and 2 miles from the shore, with soundings from 4 to 7 fathoms close to it. In passing along here, a vessel should keep within 3 miles of the shore, in 7 or 8 fathoms at

low water, and in working, she ought not to stand off above 5 or 6 miles, in 8 to 10 fathoms, for the tide is so rapid, that great difficulty would be found to regain the shore, were the wind to fail whilst she is in the offing.

Anchorage there.

Jumbasseer Road, may be known by the entrance of the river being open, and a pagoda on the north side of it, where vessels may anchor in 7 fathoms at low water, with the pagoda bearing E. N. E. $\frac{1}{2}$ N. 4 or 5 miles, and Jumbasseer Point E. by N., the dry part of the flat distant $1\frac{1}{2}$ mile. Here they will ride in safety, the north part of the flat breaking the strength of the tide, which flows to about $4\frac{3}{4}$ hours on full and change of the moon, and rises from 33 to 36 feet perpendicular. From this river, cotton, grain, and oil, are exported in considerable quantities to Bombay, and other places.

The coast and channel from Jumbasseeer to Gongway.

From Jumbasseer to Gongway, the distance is about 6 leagues, in a channel from 1 to 2 miles wide, but very dangerous by the rapidity of the tides; the soundings in it, are from 2 to 7 fathoms, at first quarter flood. The flat to the northward of Jumbasseer, stretches out 4 miles from the shore in some places, and a vessel should keep within a $\frac{1}{4}$ mile of it in passing along, in 2, 3, and 4 fathoms, until a small clump of trees is bearing east, then haul in for the shore, keeping within 200 yards of it, till abreast the town of Gongway; the anchorage is about 80 yards from high water mark, where vessels ground in the mud at first quarter ebb. No vessel must go farther than Gongway in one tide from Jumbasseer, for if she cannot reach Cambay Creek it is dangerous, as she must return to Gongway. It is high water here, about $5\frac{1}{4}$ hours on full and change of the moon. It must be observed, that the sands and channels in the northern part of the gulf, are liable to shift annually, by the violence of the freshes.

To the northward of lat. 22° 3′ N. the gulf is dry at low water spring tides, from side to side, up to Cambay.

Description of the Gulf from Gongway to Cambay.

From Gongway to Cambay, in lat. 22° 24′ N., the distance is about 5 leagues; the small vessels that navigate here always weigh at first quarter flood, and stand over, keeping the pagoda at Cambay bearing about N. by E. $\frac{3}{4}$ E., and from N. by W. to N. E. by N. in working, when to the northward of Dagom; for the shore must be kept close a-board until they pass that place. The soundings are from 2 to 4 fathoms with overfalls, and the tide so rapid, that a vessel taking the ground would immediately overset, and probably every person on board perish, which has frequently happened through the neglect or obstinacy of the pilots. In this part of the gulf, the flood sets N. E. and the ebb S. W.

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## *DIRECTIONS from SURAT BAR to GOGO, and from the GULF of CAMBAY,*

### TO THE SOUTHWARD, IN THE S. W. MONSOON.

To proceed from Surat Road in the S. W. monsoon.

SHOULD A VESSEL be detained in Surat Road, until the S. W. monsoon sets in, it will be found very difficult, if not impossible, for her to get to the southward round the foul ground of St. John, as a heavy swell tumbles in upon the shore, rendering it very troublesome to get an offing. She must, therefore, if bound to Bombay, or any other port in the southern or eastern parts of India, proceed to the northward for Gogo, where she may obtain supplies; and from thence, work along the west side of the Gulf to Goapnat Point, and afterward to Diu; from the latter place, she may stretch off from the land, and will probably reach Bombay without tacking.

Directions to sail from thence to Gogo.

A ship departing from Surat Road, or when driven from it by the S. W. winds setting in strong, ought with the flood tide to steer about N. W. keeping in 13 or 14 fathoms until through the channel between Swallow Bank and the head of Malacca Banks. The same course continued (unless the tide is very strong) will lead her upon the hard ground off Peram Island, which is an excellent guide in the night, or in hazy weather; she ought to keep along the edge of it in 12 to 14 fathoms, about 2 or 3 miles distance from the island, taking care to edge away to the northward, should the depths decrease considerably. When to the northward of the hard ground off Peram, or with Gogo Town bearing W. N. W., she ought to haul in directly for it, and anchor in 3 or 3½ fathoms at low water, with the house on Peram S. S. E. ½ E., directly abreast of Gogo Town. In running for the anchorage, care is requisite not to get to the northward, for E. N. E. from Gogo Creek, there is a bank dry at low water. And it must be observed, that the perpendicular rise and fall of tide, is from 30 to 33 feet on the springs, and flows about 4 hours on full and change of moon, except when affected by northerly or southerly winds.

Anchorage off Gogo.

The town.

The town of Gogo, about 7 miles N. W. from Peram Island, is in lat. 21° 41′ N. and 28 miles west of Vaux's Tomb by chronometer; the best Lascars in India are natives of this place, and ships touching here may procure water and some refreshments, or repair any damages they may have sustained. It is a safe place for vessels to remain during the S. W. monsoon, or to run for, should they part from their anchors in Surat Road, being an entire bed of mud to ¾ of a mile from the shore, and the water always smooth. The land about Gogo being generally low, is inundated at high spring tides, which obliges the fresh water to be brought 4 or 5 miles distance. Fire-wood is very scarce.

A caution on departing from Gogo Road.

A ship leaving Gogo Road with the ebb, must take care that the tide does not set her down on the reef off Peram, or between that island and the main, where the tide runs 10 knots per hour through a narrow gut among the rocks, but there is no safe passage for a vessel, although the island is 2 miles distant from the main land.

Excepting the bank to the N. E. of Gogo, dry at low water, the gulf is clear of danger across to Broach Point.

To steer from Surat Road toward the coast of Gujarat about Sultanpore.

A ship being necessitated to leave Surat Road by strong southerly winds, when it is not intended to run for Gogo, she may, if the weather become favorable, stretch across the gulf to the northward of the Head of the Malacca Banks, for the coast about Sultanpore, where she may anchor in smooth water to the northward of the bank situated abreast the river, or work to the southward round Goapnat Reef and Point, if circumstances admit, and afterwards to the westward, along the coast to Diu.

A remark relative to beating to Diu Head in the S. W. monsoon.

To beat from Goapnat Point, or from Gogo to Diu Head, after the S. W. monsoon is commenced, may not be always practicable, but a handy ship that sails well, having very good canvas, and proper ground tackling for working tide's work, may probably find little difficulty in doing it; for which the moon-light nights may be considered most favorable, the winds being then not so violent in general, as during the spring tides at the change of moon.

How to proceed from Gogo toward Goapnat Point.

A ship being well prepared to encounter strong winds, and if bound to Bombay, or other parts of India, should sail from Gogo Road at high water, and steer round the north-east part of the hard ground off Peram; when round it, she ought to work to the southward with the ebb, and may stand to 7 or 8 fathoms in tacking from the shore, or nearer if requisite.

Coast from Peram Island to Sultanpore.

From Peram Island to Sultanpore River, the coast has a barren aspect, fenced by rocks, and difficult of access, but may be approached to 5 or 6 fathoms.

Sultanpore River is in lat. 21° 20′ N., having a conical hill inland, about 5 miles to the W. N. W., called Tullijah Hill; when this Hill is brought to bear west, a ship must keep farther from the shore, for abreast the entrance of the river, at 4 miles distance, there is a dangerous bank nearly even with the surface of the sea at low water. It is about 1 mile long and ½ a mile broad, having 5 or 6 fathoms within it, and is steep to, on the outside, 17

fathoms about 1 mile off, and 12 fathoms close to it. Between this bank and the shoal off Goapnat Point, there is a channel leading to Sultanpore River, by keeping Tullijah Hill and Settrujah Hill in one bearing N. 60° W., which leads a vessel through in the deepest water, 2 and 3 fathoms soft ground. and to Goapnat Point.

Having reached the shoal off Goapnat Point, it will be prudent to choose day-light to work through the channel between the south end of it and the N. W. extremity of the Malacca Banks, as the soundings are no guide, the depths being 15 to 18 fathoms from side to side, and the channel scarcely 4 miles broad. When round the shoal off Goapnat Point, a ship must take every advantage of the tides in working along the coast, by anchoring when it is unfavorable; and she ought to work near it, observing (as formerly noticed in the description of this coast) that the soundings give little warning of the approach toward the shore, there being 8 and 9 fathoms close to it in some places, and the same depths 3 or 4 leagues off. When near Searbett Island, or Jaffrabad, she may venture to make longer tacks off shore occasionally, when the wind favours her, being then well to the westward of the S. W. extremity of the Malacca Banks; but it will be proper to continue to work within a reasonable distance of the coast, keeping near it till she reach Diu Head. To work round Goapnat Shoal, and from thence to Diu Head.

Having worked so far to the westward, she may stretch out from the land with the ebb tide, and should the wind incline from the westward, she will probably get into the latitude of the entrance of Bombay Harbour at a considerable distance from it, without tacking; but if the wind incline to the S. S. W. or S. Westward, it will be proper to tack occasionally to preserve the westing: for she must by no means approach near the coast to the northward of the entrance of Bombay Harbour, whether bound into it, or to the southward along the coast of Malabar to Cape Comorin. Were she to get near the land to the northward of Bombay Harbour, it would be found very difficult, if not impossible in bad weather, to work to the southward round the reef, against the heavy sea and northerly drain along shore at the setting in of the monsoon; but well out from the land, the sea runs more regular, and advantage can be taken to tack with favorable squalls or shifts of wind, whereby a ship will generally gain ground in working against the monsoon to the southward. How to proceed from the latter place to the southward.

A ship intending to beat along the Guzarat Coast to Diu Head, should have a pilot for the Gulf of Cambay on board, who may be procured at Surat or Gogo; and he may probably be conveniently landed at Diu in passing, or carried to Bombay, as circumstances require.

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## *MONSOONS, LAND and SEA BREEZES, and CURRENTS, on the WESTERN SIDE of HINDOOSTAN;*

### DIRECTIONS FOR SAILING ALONG THE COAST.

THE N. E. MONSOON, or fair weather season, generally commences about the middle of November, at Bombay, and on the northern parts of the coast; but sooner to the southward of Mount Dilly, about Calicut, Cochin, and Anjenga. The strong S. W. and Westerly winds fail after the middle of September, and are followed by light variable breezes, frequent calms, cloudy weather, and showers at times. This unsettled state of the winds and weather, between the monsoons, generally begins late in September, and continues 6 or 8 weeks, the prevailing breezes from N. Westward, but at times from S. W. and Southward; at other times, squalls may happen, blowing from the land, although these are seldom experienced in September or October. Change from S. E. to N. E. monsoon;

In some seasons attended with a storm.

At the breaking up of the S. W. monsoon, there is often much thunder and lightning, and it is sometimes attended with a sudden storm from Southward, which veers to S. W. but more generally to S. Eastward, blowing very violent for several hours. This storm has in general, happened late in October, or early in November,* after which, the N. E. monsoon sets in, with land and sea breezes, and fine weather; but the monsoon frequently breaks up, without any storm.

October and November unsettled months.

The navigation sailing either up or down the coast, in October and great part of November, is in general, tedious and uncertain, for there is no dependance on the winds, till late in November, or about the beginning of December; the sky then becomes serene, with land and sea breezes, favorable for sailing up or down the coast.

Land and sea breezes.

In December and January, the land winds are regular and strong, and sometimes (though seldom) to the southward of Calicut, they are experienced to continue blowing through a large chasm in the Ghauts upwards of 24 hours, without any intervening sea breeze. In these months, a passage may sometimes be made from Cape Comorin to Bombay in 8 or 10 days. In November, and early in December, the sea breezes are very weak, but become stronger as the season gets forward. As February advances, the land breezes decrease in strength and duration, and are not always regular.

When the land and sea breezes are regular, the latter fails in the evening about sun-set, and is generally followed by a calm, which continues until the land breeze comes off; this may be expected to commence at 8, 9, or 10 P M.; at first it comes in fluctuating gentle breezes, but soon becomes steady between N. E. and E. S. E., continuing so, till 9 or 10 A. M. next morning; it then begins to fail, decreasing to a calm about mid-day. About this time, or a little past noon, the sea breeze sets in from W. S. W., West, or W. N. W., a pleasant gale; and generally veers to the northward in the evening, then decreasing in strength.

How to benefit by these in sailing along the coast.

These land and sea breezes require the attention of the navigator, to benefit by them to the full extent. During the night, with the land breeze, it is prudent to keep well in shore, if the wind will permit without tacking; for there, it is stronger and more steady than farther out; but in the morning, it is advisable to edge more out, to get an offing of 5 or 6 leagues, or in soundings 26 or 30 fathoms before noon, ready for the sea breeze. In the evening, it is proper to be near the shore before the land breeze comes off; it may be approached to 8 fathoms in most places from Bombay to Quilon, and should a vessel get close in, prior to the commencement of the land breeze, she ought to make short tacks near the shore, until it comes off. When calm, its approach is frequently known by the noise of the surf on the beach, which reaches to a considerable distance.

The land breezes fail, and N. W. winds prevail in March and April.

In March and April, the land breezes are very faint and uncertain, seldom coming off till morning, and continue so short a time that little advantage is gained by them, as ships are obliged to stand nearly right out to gain an offing, ready for the sea breeze. In the former months, the land breezes are generally the strongest winds, but *now*, the contrary, for the sea breezes prevail greatly. These, may at this time, with propriety be called N. W. winds, for they generally set in at noon about W. by N. or W. N. W., veering gradually to N. W. and N. N. W. in the evening, where they continue during the first part of the night, declining often to a calm about midnight or early in the morning. A faint land breeze, sometimes follows; but more frequently, light airs from the northward or calms may be expected, nearly from midnight until the N. W. wind sets in about noon on the following day. These N. W. winds, at the full and change of the moon more particularly, blow strong, producing a short

Particularly at full and change of moon.

* In one of these S. E. gales which happened at Bombay about the beginning of November, 1799, several ships were driven from their anchors in the harbour. It veered to the eastward, and blew a hurricane for some time; the ships Herculus and Hunter, drove on the rocks under the castle, the latter was completely wrecked, and the other obliged to undergo a repair. On the same day, a dreadful storm happened in Table Bay, at the Cape of Good Hope, when His Majesty's ship Sceptre, with several others, were driven on shore, and part of their crews perished.

chopping sea, and a drain of lee current, making it necessary to anchor at times with a light anchor when it falls calm, to prevent being driven to the southward.

Ships bound to the northward at this time, may experience land breezes between Anjenga and Calicut, but to the northward of mount Dilly, these will generally fail in strength and duration; they ought, therefore, particularly in April, to be well out in 35 to 40 fathoms about noon, that they may be enabled to make a long stretch to the N. N. E. and N. Eastward with the N. Westerly wind. Should they get in shore early in the evening, and the wind be at N. W. it will be proper to make short tacks near the land, until the breeze veer to the northward, which may be expected in the early part of the night, they ought then to stretch off to the N. W. or W. N. Westward, to be ready for the sea wind of the following day, as there will probably be no breeze of any consequence from the land. Should the wind continue brisk, a ship will in general gain ground, or hold her own during the night; but if after a N. Wester it fall to little wind, with a chopping sea, and a drain of current setting to the southward, she ought to anchor with a kedge or stream, to prevent losing ground. Late in March*, or in April, when a strong north-wester sets in, it is liable to continue 2 or 3 days, or longer, rendering it impossible for a ship to gain any ground when working near the coast; at such times, it is advisable to stand out to sea about 20 leagues or more, where these winds are generally moderate, and the sea smooth, which will enable her to gain ground, and make a better passage to Bombay, than by persevering to work against the chopping sea and drain of adverse current, which generally prevail near the shore when the north-westers blow strong.

How to proceed to the northward in these months.

In December, January, and February, when the land and sea breezes are regular, the sea is remarkably smooth near this coast, and the sky very serene without any clouds.† This clear weather continues frequently till April, without rain during the whole of the N. E. monsoon; but in April the weather becomes hazy, and at times cloudy over the land in the evenings, with small showers. In this month, the passage up the coast is rendered very tedious, by the strong North-Westers; in some years, however, strong southerly winds have been known to blow along the whole extent of the coast in April, which continued for several days. Several ships have left Anjenga and other ports to the southward, at the commencement of these winds, which carried them to Bombay in 5 or 6 days; but such instances are uncommon, for southerly winds seldom happen in April.

Weather during the N. E. monsoon.

In May, the prevailing winds are from N. W. and Westward, but often very variable and uncertain, with cloudy threatening weather at times, lightning from S. Eastward, and small showers of rain. A gale from S. W. or Southward, is liable to happen in this month, by which several ships have speedily run along the coast to Bombay; but it is prudent to keep well out from the land, prepared for bad weather, to prevent being driven on a lee shore, should a storm set in from W. S. Westward. When N. W. winds prevail, the weather is settled and clear; but cloudy and threatening, when they blow between S. E. and S. Westward. It sometimes happens, that heavy clouds collect over the land in the evenings, producing a hard squall from it with rain about midnight; this has frequently been experienced between Mangalore and Barsalore, both in May and in June, where these land squalls blow in sudden severe gusts, through the gaps formed between the mountains.

Winds and weather in May.

When a ship bound to Bombay, is on the southern part of the coast, late in April, or in

* These N. Westers sometimes happen in the springs early in March; so early as the 10 and 11th of February 1791, a strong gale at north prevailed about 30 hours off Choul, brought us under reefed topsails, during which we lost ground.

† During the early voyages of the Portuguese on this coast, storms appear to have sometimes happened in January; at present this is the most pleasant month of the fair season: April 20th and 21st, 1782, a very heavy storm blew from the southward on most parts of the coast, in which H. M. S. Cuddalore, the Revenge, and several other ships foundered with their crews; the Essex, Nancy, and others, were dismasted. Since that time, no severe storm has happened so early in the season; but about the latter end of April, and early in May, several ships have suffered by S. W. and Southerly gales, which have been experienced in some seasons.

How to proceed to the northward in that month.

May, if the wind is favorable with steady weather, she may steer to the northward, keeping a good offing toward the Laccadiva Islands. Being clear to the northward of these islands, she ought, if the weather is unsettled and cloudy, with variable winds, to endeavour to obtain a greater offing, that she may have good sea room, in case a gale should happen. If the weather is favorable, an equal advantage will be obtained when she is 2° or 3° from the land, as the sea is more smooth for working than in-shore, where there is generally a short chopping swell, and a drain of current setting to the southward during strong north-west winds.

But a ship being on the southern part of the coast at the time mentioned above, and meeting with N. W. winds, ought to stretch off without loss of time to the westward of the islands, by passing to the southward of Seuheli-par, between it and Minicoy, or through any of the Laccadiva channels. When well to the westward of the islands, she will be ready to benefit by the approaching westerly winds, or to take every advantage of the shifts, should they continue from N. W. and Northward.

Of the S. W. monsoon.

THE S. W. MONSOON, sets in earlier on the southern part of the coast than at Bombay, the difference in time being frequently 15 or 20 days between Cape Comorin and that island; the fair weather sets in proportionally sooner to the southward, where ships may anchor in September with safety, or even in August, if care is taken to lie well out, ready to proceed to sea on the appearance of a gale; though a severe one seldom happens in August or September, on the coast to the southward of Mount Dilly.

Period when it sets in.

About the latter end of May, or early in June, the S. W. monsoon generally sets in on the southern part of the coast;* it frequently commences with a gale from S. E. veering to South and S. Westward, where it ultimately becomes fixed; at other times, it commences with squalls from S. W., and a heavy sea rolling in upon the shore. In June, after the monsoon is set in, the wind keeps mostly between S. W. and W. by S., with severe squalls at times, much rain, and a high sea. In July; the weather is nearly the same, becoming a little more settled as the month advances, the squalls veering sometimes to West and W. N. W. The sky is mostly obscured by heavy clouds during these months, precluding observations for several days at a time, but considerable intervals of fine weather have been experienced in some seasons. Ships have left Bombay Harbour so late as the 6th or 8th of June, and with fine weather, passed down the coast without making a tack, the wind prevailing at W. S. W. and Westward, steady breezes; but such favorable seasons, are seldom experienced.

Severe weather in June and July.

August,

In August, the monsoon does not blow so violent as in the preceding months, the squalls then, veer more to the West and W. N. W.; particularly on the southern part of the coast, N. W. and W. N. W. winds are those which prevail in this month, near Anjenga and Cape Comorin.

and September more moderate.

In September, the weather becomes more moderate, the Westerly and W. N. W. winds being more prevalent than any other in this month; the squalls *now*, are seldom severe, although the weather is often cloudy and threatening, with heavy showers of rain. A large swell often rolls in from the W. S. Westward in this month, particularly during unsettled squally weather, which sometimes happens.

From the early part or middle of November, to the latter end of February, when land and

* Between Cape Comorin and Anjenga, the S. W. monsoon, viz. stormy weather from S. Westward, may be expected in general to commence between the 20th and 28th of May; between Mount Dilly and Goa, early in June; and at Bombay, from the 6th or 8th to the 15th of June. To this statement, there are however exceptions, for in some seasons the bad weather has been known to set in at Bombay early in June; and in other seasons, not until the 15th of the same month about Mangalore. Steady southerly winds, frequently prevail at Bombay with dry hazy weather, for several days prior to the approach of stormy weather; at other times, it is preceded by West, W. N. W., or N. W. winds, but most commonly, those from W. S. W. and S. Westward.

sea breezes prevail along the coast, at the distance of 3° or 4° from it, and in the vicinity of the Laccadiva Islands, the winds blow in steady breezes generally between North and N. E. frequently veering 3 or 4 points during the 24 hours, resembling land and sea breezes, or night and day winds. Winds to the westward of the islands from November to March.

In March and April, at the same distance from the coast, the winds keep mostly between North and N. W. veering 2, 3, or 4 points during the 24 hours, but continue most steady at N. N. Westward. In March and April.

In May, at the same distance from the land, they become variable, veering at times to the westward when the S. W. monsoon is near. During the monsoon, they blow strong between S. W. and West, with a high sea; but the weather is generally more favorable here, than near the coast, there being fewer squalls, and much less rain; although in some seasons, ships have been dismasted at a considerable distance from the coast, in June, when the monsoon commenced by severe storms. During the S. W. monsoon;

In September, when the S. W. monsoon fails, the winds outside the bank of soundings, at a considerable distance from land, veer to the North-westward, where they continue until the commencement of the North-east monsoon, sometime in November. And subsequently.

What has been mentioned relative to the prevailing winds throughout the year, at a distance from the coast, may be applied to the whole extent of sea from the parallel of Bombay to 5° or 6° N. lat., among the Laccadiva Islands, and for a considerable distance to the westward of them, in the open sea. But in March, N. N. E. winds mostly prevail, with a S. Westerly current, when far to the westward of the Maldiva Islands.

THE CURRENT, on the Malabar Coast, is generally very weak and uncertain in November, except about Anjenga, and between it and Cape Comorin, there is at times in this month, a strong set to the S. Eastward, along the shore. Between Anjenga and Cape Comorin, there is at times, in January, a current setting to the northward. Current on the coast in November.

From November to March, when the weather is generally fine, with land and sea breezes, there is seldom any current on the coast. But between the islands and the African Coast, it sets with the monsoon, to the S. Westward. From thence to March, none.

In March and April, when N. W. winds blow strong, a drain of lee current is generally impelled before them, along shore to the S. Eastward; at other times, there is little or no current. In these months, about the Laccadiva Islands and to the westward of them, it sets mostly to the southward or S. Westward; particularly in March, when the N. E. monsoon continues throughout this month at times, or even to the 5th or 6th of April, in the open sea between the islands and African Coast; the current, then, sets with the wind to the S. W. It may be observed, as a general rule, that in this sea the current is governed by the wind, always setting to leeward when the latter blows from one direction any considerable time. Currents in March and April.

In May, the current mostly sets to the southward, from 4 to 6 or 7 miles per day, but near the southern part of the coast, about Anjenga and Cape Comorin, it sets sometimes stronger; in this month, and also in June, it however, often happens, that there is little or no current near the coast. When the wind veers to the southward in these months, it brings with it a current setting along shore to the northward; this is always the case on the northern part of the coast, about the entrance of Bombay Harbour. In the open sea, to the westward of the islands, the current in these months, sets generally to the eastward. In May and June,

In July, when the rains have swelled the rivers, producing great outsets, the current begins to set stronger along the coast to the southward: at the entrance of Bombay harbour, there is seldom any southerly current experienced, the freshes setting directly out to the westward, and the flood and ebb tide counteracting each other; but a little to the southward of Bombay, the southerly current is generally found to run from 10 to 15 miles per day, augmenting to 15 and 20 miles as the distance is increased to the southward. This southerly current continues during August and September, strongest between Cochin and Cape Comorin, where it And from June to November.

frequently runs from 20 to 30 miles in 24 hours, in August, September, and the early part of October. In general, the current diverges a little from the direction of the coast, when the freshes are strong out of the rivers, although at times, it inclines toward the shore; between Calicut and Anjenga, in the latter end of September and beginning of October, it has been found at times to set E. S. E. and S. E. from 1 to 1½ mile per hour.

This southerly current setting along the coast, is not constantly experienced, being liable to obstructions from various causes, particularly when the wind hangs far south, and blows strong. So late as the end of July, the current has at times, been found to set weak to the northward, between Anjenga and Cape Comorin, but this seldom happens.

In July and August, to the westward of the islands, in the open sea, the current sets to the eastward with the wind; in September and October, it sets to the southward.

Directions. Ships bound round Cape Comorin, sail from Bombay in every month of the year, but at the *present* time, none attempt the passage up the coast after May, until September is considerably advanced.* The passage to the northward in September and October, is rendered very tedious, by adverse winds and currents on the southern part of the coast. In the Anna, we made the land over Anjenga, 18th September, 1793; found the winds at N. W. and variable, with frequent light airs, and a constant strong current to the southward. This obliged us to anchor frequently when the breezes failed, to prevent being driven back by the current. The weather seemed threatening at times, with heavy showers, and some light squalls from the sea, which produced a considerable swell setting in upon the shore.

On the 11th of October, we reached Mount Dilly; there, the southerly current failed, and was succeeded by a small drain to the northward two days; and on the 21st, we reached Bombay.

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# *BOMBAY HARBOUR, and the circumjacent LAND; with SAILING DIRECTIONS.*

## 1st. DESCRIPTION OF THE HILLS, LIGHTHOUSE, ISLANDS, &c.

Neat's Tongue, NEAT'S TONGUE, is an oblong high hill, on the Island Salset, situated to the N. N. Eastward of the harbour; it has a regular sloping outline, seen at a considerable distance from sea, when the weather is clear. On the south-east point of this hill, there is a white house, which answers as a mark to avoid Caranja Shoal, by keeping it, or that point of the Neat's Tongue, a little open with the north-west end of Butcher's Island. This is a low island, situated far up the harbour between Caranja and Salset, of a regular and level aspect, with a few trees, and some small buildings on it; but it is not perceived, until a ship has entered the harbour. Toward the south end of Caranja Shoal, abreast the great hill, the south-east end of the Neat's Tongue may be brought to touch the north-west end of Butcher's Island.

Butcher's Island.

* It is however, remarkable, and evinces great nautical skill and perseverance among the English navigators of early times, that some of them effected a passage up the Malabar Coast, nearly in the strength of the S. W. monsoon. The ship Bengal Merchant, from England, Capt. Perse, on the 17th July, 1686, made the coast at Anjenga, anchored in 19 fathoms off Quilon on the 20th, and remained here some time; on 14th August, she moored at Calicut, left it on the 19th, passed Mount Dilly on the 23d, and arrived at Bombay Harbour on the 7th of September. These dates are supposed to be those of the old stile, or 11 days later than the present calculation.

ELEPHANTA ISLAND, about 3 miles south-eastward from the point of the Neat's Tongue, and about the same distance east from Butcher's Island, has a peak a little northward from its centre: it is the *first* isolated piece of high land seen to the right of the Neat's Tongue, in approaching the harbour from the south-west or westward. Elephanta.

CARANJA ISLAND, situated to the southward of Elephanta, on the east side of the harbour, is of considerable extent, low and woody; except two remarkable hills, called Great and Little Caranja Hills, separated by a neck of low land. Caranja Island.

CARANJA LITTLE HILL, situated on the north part of the island, has an irregular outline, about the same height as Elephanta, resembling it when seen from seaward; and is the *second* piece of isolated high land, seen to the right of the Neat's Tongue. Little, and

CARANJA GREAT HILL, situated near the south part of the island, is very conspicuous, being a little convex, of tabular form, with a steep declivity at each end; which parts are called the north and south brows of the hill. On the north brow, there is a small knob, with the ruins of a building; which, except when near it, is not perceived. This hill is the *third* piece of isolated high land, seen to the right of the Neat's Tongue. Great Hills.

HIGH LAND OF TULL, is the next in succession to the right (or southward) seen in coming from the westward. The opening between this and Caranja Great Hill, leads into Penn River. High Land of Tull.

HENERY ISLAND, is very low, fortified around with a wall, bearing from Kanary about E. by N. $1\frac{3}{4}$ mile, and is distant about a mile from the main. Henery Island.

KANARY ISLAND, is higher than the former, and though small, is covered with houses and trees, encircled by a fortified wall. Being situated under the high land of Tull, it is not easily perceived from seaward. It appears of square form, level and small, and is just discernible from the decks of the ships in Bombay harbour when they are elevated by the tide near high water, the distance being 15 miles. This island is in lat. 18° 42′ 12″ N. and on the meridian of the lighthouse of Old Woman's Island, distant from it $11\frac{1}{2}$ miles. Kanary Island.

OLD WOMAN'S ISLAND, is low, with a small elevation at the south end, on which part the lighthouse is situated, being in lat. 18° 53′ 45″ N. and bears true S. 36° W. from Bombay Castle, distant $2\frac{1}{2}$ miles. It is kept white, and the lantern being 130 feet above the level of the sea, may be seen at a considerable distance in clear weather; but it is generally hazy about the entrance of Bombay harbour. The island is separated in two parts by a small causeway, covered by the sea on spring tides; the southern part is sometimes called Colabah, and the smallest part to the northward, on which Broughton's Grove is situated, Old Woman's Island. In April, 1803, the variation at the lighthouse was 00° 50′ W. having altered little during 30 or 40 years, which is the case in most parts of the seas of India. Old Woman's Island and Lighthouse.

BOMBAY ISLAND, in coming from seaward, appears very low, excepting Malabar Hill, which is of middling height, having a regular oblong appearance, sloping a little toward the sea, and is covered with trees; among these, some white buildings are interspersed, with a signal-post and flag-staff at the point. Bombay Island, Malabar Hill.

MAZAGON HILL, situated to the northward of Bombay Town, is of middling height, not easily known until well up the harbour. Parell Hill, farther northward, is a round mount Mazagon and other Hills.

Suree Fort. having on it a flag-staff; but this, and an oblong hill near it, covered with trees, are not perceived till far up the harbour. Suree Fort is on a point of land near these hills.

Cross Island. CROSS ISLAND, lies about 2 miles to the northward of the shipping; it is small, and resembles a haycock.

Bombay Castle. NORTH-EAST BASTION, of Bombay Castle, is the most prominent angle of the works toward the sea. When abreast of the Sunken Rock shoal, coming up the harbour, this bastion is not easily distinguished from the wall of Fort George, which is situated a little farther to the northward, and on higher ground than the former.

Geo. site of the Flagstaff. THE FLAGSTAFF, is situated on the S. E. bastion of Bombay Castle, in lat. 18° 55′ 48″ N. and in lon. 72° 57′ 40″ E. of Greenwich, by mean of 10 immersions and emersions of Jupiter's 1st and 2d satellites, observed by me in January, February, March, and April, 1803, and compared with M. D. Lambre's computation for Greenwich mean time. This lon. of Bombay, is corroborated by numerous chronometric and lunar observations, taken by various navigators; although Captain Basil Hall, of the Royal Navy, made it 7 miles more to the west, by 3 eclipses of Jupiter's 1st satellite, in 1814; or in lon. 72° 50½′ E.

## 2d. DESCRIPTION OF DANGERS, WITH THE MARKS TO AVOID THEM.

Foul Groud off Tull described. TULL REEF, OR FOUL GROUND OFF TULL, may be considered during the S. W. monsoon, the greatest danger in the entrance of the harbour, to ships at a great draught of water.

It is generally composed of rocky bottom in patches, with large gaps of soft ground between them; particularly within the outermost patches, there is a gap or channel of deep water and soft ground, extending N. N. E. and S. S. W., which is wide at the northern part. The Surat Castle, struck on one of the outer patches of rocks, lost her rudder, and narrowly escaped being wrecked, by the high sea lifting her over it into the gap of soft ground inside, where there are 1 and 2 fathoms more water than on the outermost rocky patches.

The outermost patches of rocky ground, on which are only 3½ or 3¾ fathoms at low water spring tides, lie near 2¾ miles distant from the nearest shore of Tull; and a direct line *south* from the lighthouse, just clears (or nearly touches), the western edge of the outermost patch of rocky ground.*

For avoiding the dangers in the entrance of the harbour, the Mount, or Nob of Tull, is useful as a mark in thick weather; it being of a round form, situated near the sea at the extremity of Tull Point, and detached from the more distant land.

* In Mr. Nichelson's large Plan of Bombay Harbour, and others copied from it, from Tull Point the Reef or Foul Ground is projected out in the form of a tongue, the extremity of which is distant only 1½ mile from the Point: A line from the lighthouse S. by E., in these plans, passes clear of it; whereas, this line really passes over the middle of the Foul Ground, where there is frequently 1 and 1½ fathom more water than on the rocky patches near a mile farther out. Through the gaps or channels inside these patches, several ships have passed in the fair season, without knowing it; and there is depth at half tide on them, sufficient for a ship when the sea is smooth; but in the S. W. monsoon, the high sea that rolls in toward Tull, seems sometimes ready to break on the outermost rocky patches of the foul ground.

With Tull Nob bearing from E. ¼ N. to E. by S., the foul ground is very dangerous, as here, the rocky patches project farthest out, and the depth of water decreases very little near them. With these bearings of the Nob, approach no nearer the foul ground than to bring Kanary S. ½ E., or the lighthouse N. ½ E.; or keep the latter a little open to the eastward of all Malabar Hill, until a large rock at the entrance of Penn River, called Gull Island, is about half a point open to the southward of the low woody south point of Caranja, near the Great Hill, or until the south brow of this hill bears E. by N.; you are then to the northward of the extremity of Tull Reef. With Gull Island very little open, or touching the low woody south point of Caranja when the lighthouse bears N. ½ W., or is a little shut in with the eastern part of Malabar Hill, you are on the northern point of the foul ground, where 5½ fathoms rocky bottom, is the least water at low spring tides. There is no danger in the fair season, by borrowing a little upon this point of the foul ground; from 4½ to 5½ fathoms hard ground, being the smallest depths at low water; but do not shut Gull Island far in upon the low woody point of Caranja. How to avoid it.

CARANJA SHOAL, is an extensive bank on the eastern side of the harbour, projecting a great way out from Caranja Island to the westward. The south-western edge of it bears from Tull Nob about N. by W., from the south brow of Caranja Great Hill about west, and is distant from Gull Island near 2 miles to the north-westward. Caranja Shoal.

The north part of this shoal opposite the Little Hill, is steep to, and rocky in some places: but the south part of it abreast the Great Hill is more even, composed of hard sand, and not so steep as abreast the Little Hill. The S. E. point of the Neat's Tongue open with the N. W. end of Butcher's Island, leads clear to the westward of the edge of this shoal. On the southern edge of the shoal, abreast the Great Hill, a ship may in fine weather, borrow to have a hard or shoal cast in working, when certain of not missing stays; but should tack on getting the first cast of hard soundings, particularly in a large ship, and near low water.

SOUTH-WEST PRONG, or S. W. extremity of the reef which surrounds Old Woman's Island, forms the northern boundary of the entrance into the harbour, and Tull Reef the other; the breadth of the channel between them is about 3 miles. The extreme point of the S. W. Prong, is distant 2.9, or near 3 miles from the lighthouse, bearing S. 36° W.;* for a line drawn from the extremity of the Prong N. 36° E. passes through the lighthouse, through Broughton's Grove, through the Flagstaff of Bombay Castle, and touching the inner part of Cross Island, passes to the central part of the Neat's Tongue, making a transit with all these places. From Malabar Point it bears S. ¾ W. distant 5 miles. S. W. Prong, and mouth, of the harbour.

The S. W. Prong, consists of sharp rocks; being steep to, the soundings give no warning near it. At low water spring tides, the rocks appear above the surface to a considerable distance from the lighthouse, and when the sea runs high in the S. W. monsoon, heavy breakers appear far out upon the Prong at low water, but not to its extreme point. For rounding this Prong, and entering the harbour, a good mark in clear weather is the Funnel Hill, remarkable by a rock on it resembling a chimney, and is situated behind Caranja Island, about 18 miles eastward from Bombay Castle. In entering the harbour, when the Funnel Hill is visible, keep it just open, or touching the north brow of Caranja Great Hill, or that part of the hill E. 7° N. until the Oyster Rock is brought on with the flagstaff of Bombay Castle; you may then begin to haul to the N. Eastward round the reef, drawing the Oyster Rock as far in upon the town as the court-house, or largest building, by the time the light- How to enter it, and proceed

* It has been erroneously stated to bear S. 40° W. from the lighthouse, a dangerous mistake, by exhibiting the entrance of the harbour broader than it really is; more particularly as Tull Reef projects much farther out from the shore on the other side of the entrance, than is delineated in the former plans of the harbour.

house is brought to bear North or N. ½ W. By the time it bears N. N. W. the Oyster Rock should be brought on with the church steeple; steer then well to the Eastward to pass clear of the Sunken Rock Shoal, by bringing Mazagon House or Hill, a large half point open to the Eastward of the outer bastion of Bombay Castle. This mark continued, will carry a ship clear to the Eastward of the Sunken Rock Shoal, and of the Dolphin Reef, and to the westward of the Middle Ground, among the shipping in the harbour.

to the shipping.

Another mark for passing the S. W. Prong.

On the northern declivity of the high land of Tull, there are near each other, two small hummocks called the Paps, but not very conspicuous; when the Funnel Hill is not seen, Tull Nob on with the northernmost of the 2 Paps, is a safe but close mark, in passing the extreme point of the Prong. Do not bring the Nob of Tull to the southward of this north Pap, for if brought between the Paps, you will pass over the extreme point of the Prong, where a large ship may strike on the rocks at low water if there is any swell.

When the lighthouse bears N. N. E., there is a gap or bason in the reef, with a soft bottom, and the same depths of water as in the channel. This gap separates the outer part of the reef, or *South-west Prong*, from the eastern part generally called the *South-east Prong*, which commences when the lighthouse bears about N. by E. ½ E., extending nearly in a north-east direction to the Sunken Rock Shoal. This part of the reef, is also rocky, with some small gaps of soft ground and deep water on its outer edge, when the lighthouse bears from N. ½ W. to N. by E. There are several small holes, or places of soft ground and deep water, well in upon the reef, having 3¼ or 4 fathoms rocky bottom much farther out, toward its exterior edge.

Farther description of the reef surrounding Old Woman's Island.

The soundings near the eastern part of the reef, like those close to the South-west Prong, are soft mud, but no guide in the approach toward it; the depths being nearly the same in mid-channel as close to the reefs, or not more than ½ a fathom difference: there is rather less depth near the edge of the foul ground off Tull, than toward the reef off Old Woman's Island.

When so far entered the harbour as to have the lighthouse N. ¾ W. or N. by W., the reef projecting around Old Woman's Island is not so steep and dangerous as it is farther out; for the hard rocky bottom is then more even, and a ship not drawing much water, might venture to get a hard cast on it, when the lighthouse is more westerly than N. ½ W., and the tide flowing fast; but if near low water, with any swell, it would be imprudent to borrow on the edge of the reef in any part.*

Sunken Rock Shoal.

SUNKEN ROCK SHOAL, is near ½ a mile in length east and west, and near 2 cables lengths in breadth at the widest part, consisting of hard uneven ground, 2 and 3 fathoms on it at low water, springs. On the outer edge, to the eastward, there is a large rock on which the sea sometimes breaks, when near low water in the S. W. monsoon; which is seldom, there being 1¼ and 1½ fathoms over the rock, at low water spring tides. A buoy is in general placed near it on the outside, or upon it, and a pilot vessel stationed there in the S. W. monsoon. The buoy, placed at a small distance outside of it, bears from the lighthouse S. 68°.E. 1.39 mile. From this rock, the shoal has been called the Sunken Rock, though it is properly a *considerable shoal*, having another rocky place, of 1½ and 2 fathoms at low water, on the inner part of it, about ½ a mile from the former. Between them, the depths on the shoal are 2, 3, and 3½ fathoms at low water, generally hard ground; and the inner part of this shoal, joins to the upper end of the reef projecting from Old

* The Flagstaff of Bombay Castle open to the eastward of the Oyster Rock, (Mr. Nichelson's mark for passing clear of the S. E. Prong, or eastern part of the Reef) is too close; for several ships deeply laden, have in running along the edge of the Reef, struck on it about low water, with this mark on. The Oyster Rock being situated near Old Woman's Island, and a small part of it only visible above water at high tides, it is not easily discerned by a stranger, till well within the entrance of the harbour.

Woman's Island, which makes the passage inside the Sunken Rock Shoal unsafe, except for small vessels.

The northernmost tomb on Old Woman's Island, in one with the south part of the Oyster Rock, leads clear to the northward, or above the Sunken Rock Shoal.

Malabar Point open to the southward of the southernmost grove of trees on Old Woman's Island, leads clear to the southward of the Sunken Rock Shoal. Mazagon Hill ½ a point open with the outer bastion of the castle, leads clear to the eastward of this shoal. To pass clear of it.

DOLPHIN REEF, is a rocky shoal projecting from Broughton's Grove, which is a large plantation of brab trees on the N. E. part of Old Woman's Island; on the inner part of this reef, near the shore, the rocks at low water springs, are dry. Mazagon House a little open with the outer bastion of Bombay Castle, leads on its edge, but ½ a point open leads clear of it. When Malabar Point is on with the gut between Old Woman's Island, and the low sandy south point of Bombay, called Mendam's Point, you are clear to the northward of it; and Malabar Point a little open to the southward of Broughton's Grove, is clear to the southward of this reef. Dolphin Reef. To avoid it.

APOLLO SPIT, projecting from the saluting battery to a considerable distance, is hard and stony, but not dangerous; ships moor clear of it, to prevent grounding, or rubbing their cables. When on the outer point of this spit, the guard-house over the Apollo gate, is between the small turret and the bushy tree on the ramparts, and Mazagon House a little open with the outer bastion of Bombay Castle. Apollo spit.

MIDDLE GROUND SHOAL, is steep to, all round; on the S. E. side, it is a steep wall of rocks, the sea nearly breaking on it at low water, spring tides, when blowing hard, there being only 3 and 4 feet on the shoalest places at these times. Suree Fort just touching the west point of Cross Island, leads clear inside or to the westward of the Middle Ground. The Oblong Woody Hill (close to the northward of Parell Hill), a little more than half shut in with the west end of Cross Island, leads clear to the eastward or outside of the Middle Ground:—or another mark to pass outside of it, is the sandy beach to the southward of Suree Fort, all open to the eastward of Cross Island. When clear to the northward of this shoal, the church steeple is on with the Bunder Gate; and Malabar Point on with the sandy point of Bombay Island, is clear of it to the southward. Middle Ground Shoal. Marks to pass clear of it.

FLAGSTAFF SHOAL consists of rocky bottom, the depths on its shoalest parts being about 14 feet at low water spring tides. Between this and the two last mentioned shoals, is the space where ships generally moor, abreast the town, in 4 and 5 fathoms at low water, soft mud. Flagstaff Shoal.

The church steeple and flagstaff in one, and Mazagon ruined fort (or black tower) on with the gap between Parell Hill and the Oblong Woody Hill, is on the centre of the Flagstaff Shoal; but Mazagon ruined fort on with the centre (or rather nearer the gap than the centre) of the Oblong Woody Hill, leads clear inside of it; and Magazon ruined fort on with the centre of Parell Hill leads clear of it on the outside. When clear to the northward of it, the church steeple is a little open to the southward of the single brab tree on the castle; and when to the southward of it, the flagstaff on the castle is a little more than half way from the steeple toward the single brab tree. Marks for it, and how to be avoided.

## 3d OF TIDES, SOUNDINGS, &c.

Rise and fall of tides.

IT is requisite for every person sailing in or out of Bombay Harbour, to remember that the tides rise and fall from 14 to 17 feet on the springs, and 10 or 12 feet perpendicular at the quadratures.

At low water spring tides, the depths close to the S. W. Prong, and round the edge of the reef extending from Old Woman's Island, are $6\frac{1}{2}$ and 7 fathoms, and 9 or $9\frac{1}{2}$ fathoms at high water.

Depths of water near the Reefs,

The depths close to the N. W. extremity of Tull Reef, are about $\frac{1}{2}$ a fathom less than near the Prongs, and in mid-channel, about $\frac{1}{2}$ a fathom more than near them.

and in the fair channel.

With the lighthouse bearing N. or N. by W., the depth at low water spring tides, is $7\frac{1}{4}$ or $7\frac{1}{2}$ fathoms in the fair channel between the reefs, which shoals gradually in proceeding up the harbour, to $6\frac{1}{4}$ and $6\frac{1}{2}$ fathoms abreast the Sunken Rock Shoal, and to 5 or $5\frac{1}{4}$ fathoms near the Middle Ground Shoal; but *marks* and not *soundings* must be the principal guide, both in the entrance and within the harbour.

Quality of bottom.

Except upon the reefs or shoals, the bottom is proper for anchorage throughout the harbour, being soft mud or clay.

Velocity of tides,

and their direction.

The velocity of strong spring tides between Tull Reef and the Prongs is $2\frac{1}{2}$ or $2\frac{3}{4}$ miles per hour, abreast the shipping outside the Middle Ground Shoal nearly the same, but not so strong where they moor. In the entrance of the harbour the tide does not set fair through the channel, but the flood slants over the extremity of the foul ground off Tull to the eastward, towards the opening leading to Penn River. And during the rains in the S. W. monsoon, the ebb sets strong out of that river to the westward, which greatly assists ships in working out of the harbour; but it is only on the springs that the outsets from the rivers are strong.

Time of high water.

At the Dock Head and where the ships moor, it is high water at a few minutes past 11 o'clock, on full and change of moon; and about three quarters of an hour later below the Sunken Rock Shoal, in the entrance of the harbour.*

Back Bay.

The breadth of Back Bay, formed between Malabar Point and the lighthouse, is near 3 miles; the water all over it is very shoal, with reefs of rocks partly dry at low water, but there is a small channel for boats along the north side of it, close under Malabar Hill. This bay might be *possibly* mistaken for the entrance of the harbour, by persons unacquainted, falling in with the land to the northward in thick weather, when the lighthouse or other marks are not discernible.

Soundings off the entrance of the harbour.

On the parallel of Kanary Island, the depths are 7 fathoms at low water 5 miles from it, 14 fathoms about 10 miles, 30 fathoms about 20 miles, 40 fathoms about 11 leagues from it; and 40 leagues west from this island, the depth of water is only increased to 50 fathoms, so flat is the bank on the parallel of the entrance of the harbour.

Soundings to the northward of S. W. Prong.

It has been observed, that the extremity of the S. W. Prong is steep to, and the soundings near it no guide; but to the northward of the Prong, when the Peak of Elephanta is shut in with the lighthouse, the depth decreases gradually on the edge of the hard ground that projects from the rocky ledges of Back Bay to seaward.

* In December and January, when the sun is near the southern tropic, there is on the springs nearly 2 feet more rise of tide in the night than in the day; but in June and July, when the sun has great north declination, the day tides are highest. In the foul weather season, ships are therefore, moved in and out of dock with day light; but ships drawing much water, must in the former months be transported in and out on the night tides. The docks at present can receive 5 ships of the line, and are well constructed There is another at Mazagon for small ships. This phenomenon of inequality of night and day tides, in the different seasons, is also experienced on the Guzarat and Guadel Coasts, and apparently on the South Coast of China, and in some other places of the Eastern seas.

## 4th. BRIEF REMARKS FOR ENTERING THE HARBOUR.

TO REFER to all the marks given to avoid the shoals, in describing them under Section 2d, it may often be difficult when ships are running speedily into the harbour, with a strong wind and flood tide; the following directions, therefore, may be readily comprehended to guide the navigator, as the pilots cannot reach a ship in the S. W. monsoon until she is well entered the harbour. Of entering the harbour.

Should a ship in working out, meet with severe weather, split her sails, or sustain any accident in the night, so as to force her to return; or, if approaching the harbour from sea, with a fair wind for running into it during the S. W. monsoon, it will be prudent, if the Island Kanary is seen and not the light, to keep it well to the S. Eastward until the latter is visible. If the wind is southerly, do not bring Kanary to the southward of S. ½ E.; if westerly, or baffling, with a swell rolling in toward Tull, do not bring it to the southward of at most S. by E. until the light is seen, or in shoaling haul to the N. N. Westward, there being a flat extending from Kanary to the S. W. part of the foul ground off Tull. In standing toward this flat, the depth decreases gradually, and increases in standing from it about N. N. W. toward the S. W. Prong. When the light on Old Woman's Island is seen, let it be the principal guide. Should the wind be far to the westward, or baffling, with a heavy swell rolling in upon Tull, run into the entrance of the harbour, keeping the light N. N. E. to N. N. E. ½ E. until the S. W. prong is judged to be near, then edge away to the eastward. (The lighthouse N. N. E. ½ E., leads a ship within the extreme point of the S. W. prong; bearing N. N. E., it is on with the large gap of the reef between the prongs.) Should the wind prevail brisk at S. Westward, bring the light N. by E. or N. by E. ½ E., and run in with these bearings, which will carry a ship fairly into the entrance of the harbour, about mid-channel between the extremity of the S. W. prong and the edge of Tull Reef. When thus far advanced, if the night is not very dark, Caranja Great Hill will be seen, known by its bold and even shape, and by the bearing. When its south brow bears E. by N. ½ N. it is in one with the northern extremity of the foul ground off Tull, where the smallest depth is 5½ fathoms at low water with this bearing. When the south brow of this hill bears E. by N. you are to the northward of all Tull foul ground, and ought to edge over to the eastward, to give a good birth to the southern part of the reef off Old Woman's Island. Directions.

When running in with the light N. by E. to N. N. E.,* if the night is dark, and Caranja Great Hill not discernible, it may be difficult to know when you are to the northward of Tull foul ground, and approaching the southern edges of the prongs; in this case, much attention is requisite, as it must depend on judgment. The northern part of Tull foul ground where there is any danger, is distant from the lighthouse upward of 5 miles, whereas, the edges of the prongs, are only 2 and 2¼ miles from it bearing N. by E. or N. by E. ½ E.; the light may therefore be useful at times as a guide, by attending to the brilliancy and appearance, to judge from what side of the channel it is seen.

When the lighthouse bears N. 36° E. and N. by E. ½ E., the south brow of Caranja Great Hill is in one with the edge of the prongs bearing E. ¼ S.; therefore, the south brow of this hill from East when near the prongs, to E. by N. ½ N. on the northern extremity of Tull foul ground, are the bearings for the breadth of the channel in this narrowest part of the entrance of the harbour.

In running in under easy sail, with the light bearing N. by E. to N. by E. ½ E., if Caranja Great Hill is not discernible, and you judge yourself to the northward of Tull Reef,

* Care must be taken not to mistake any of the casual lights of the military cantonments on Old Woman's Island, for that of the lighthouse; although, with common attention, this cannot probably ever happen.

and approaching the south part of the prongs, by the appearance of the light or otherwise, edge immediately well over to the eastward until it is brought to bear N. by W. or N. N. W., you will then be above the prongs and most dangerous parts of the reef. Should you be deceived in estimating the distance from the light, and have a hard cast on the edge of the reef with the light N. by E. or N. by E. ½ E., haul out instantly to the S. Eastward, it being steep to, with deep gaps, from 6½ fathoms soft, to 3¾ or 4 fathoms rocky ground at low water, with these bearings. On the other hand, should you have edged to the eastward before being clear to the northward of Tull Reef, and get hard or irregular soundings on it, haul to the N. Westward a little, till in the fair channel.

Having passed inside of Tull Reef and the Prongs as directed, and the light bearing N. by W. or N. N. W., you are then fairly entered into the harbour, and may steer N. E. to N. E. by E. until the light is brought to bear W. N. W. When it bears from W. N. W. to W. by N. you are abreast the Sunken Rock Shoal, and should edge well over to the eastward towards Caranja Shoal, to give the former a wide birth; when the light bears W. by N. you are above it, and may haul directly to the westward, and anchor with the light any way between W. by N. and W. S. W., which are fair bearings betwixt the Sunken Rock and Middle Ground Shoals. If the night is dark, to prevent running too close to the Oyster Rock under Old Woman's Island, or too near the Middle Ground Shoal, anchor with the light bearing from W. by N. to W. by S.

And to proceed into good anchorage.

Should a ship in edging to the eastward to give a wide birth to the Sunken Rock Shoal, get so far over as to have a shoal or hard cast on the edge of Caranja Shoal, there is no danger if she haul directly off to regain the fair channel in the western side of the harbour, for this shoal is not here so steep, as it is farther up abreast of Caranja Little Hill, opposite to the Town of Bombay. With the wind at W. or W. by N., it will not be prudent to make free with the eastern side of the harbour, either toward Tull Reef or Caranja Shoal.

## 5th. TO WORK INTO THE HARBOUR DURING THE NIGHT, WHEN THE WEATHER IS CLEAR.

To work into the harbour in the night.

WHEN the sky is clear in the night during the fair weather season, persons a little acquainted, to save time, may work into the harbour with the land wind and flood tide, after Kanary, or the light on Old Woman's Island is discerned. Work toward the entrance of the harbour, traversing with the light *when seen* from N. ½ E. to N. N. E. ½ E., until the south brow of Caranja Great Hill bears E. by N. or E. by N. ¼ N., being then above the extremity of Tull Reef, long tacks to the eastward may be made with safety, toward the south end of Caranja Shoal.

When the south brow of Caranja Great Hill bears East, you are on the parallel leading close to the outer edges of the prongs; and in tacking from the north side of the channel, ought to keep the light to the westward of north. With the light bearing from N. by W. to N. W., the edge of the reef is not so dangerous and steep as farther out amongst the prongs, and a ship with these bearings, if not going fast through the water, nor drawing above 18 or 19 feet, might *venture* to get a hard cast on it, when more than *half-flood*. Otherwise, this is not advisable, for some ships, even in day-light, by borrowing too close, have struck on this part of the reef near low water. When the light bears from W. N. W. to W. by N. the Sunken Rock Shoal is abreast, give it a wide birth by working well over to the eastward; and in so doing, should the depth of water decrease, or a hard cast be got on the edge of Caranja Shoal, haul directly to the westward, or tack to regain the proper channel. When the light bears W. by N. you are above the Sunken Rock Shoal, stand then

well over to the western side of the harbour, and anchor with the light from W. by N. to W. S. W. at discretion, between the Sunken Rock and Middle Ground Shoals.

When abreast of the Sunken Rock Shoal, and not too far over to the eastward, the shipping in the harbour may be discerned, if the night is *very clear*. Should the ships be plainly seen, and you be anxious to reach them, observe when the light is brought to bear W. S. W. you approach the Middle Ground Shoal, and make sure of not getting too near it on one side, nor to the Dolphin Reef on the other, for the distance between them is only about ½ a mile: With Cross Island N. by E. you are close to the inner edge of the Middle Ground Shoal, when it bears N. by E. ¾ E. you are close to the outer edge of the Dolphin Reef, these angular bearings of Cross Island embracing the breadth of the channel, when near the shipping, and passing within the Middle Ground Shoal. If Cross Island is seen through among the ships when the light is brought nearly W. S. W., bring the former immediately to bear N. by E. ¼ E., and keep it so, in running between the dangers above mentioned, till you anchor among, or close to the shipping. Cross Island may be brought to bear from N. by E. ¼ E. to N. by E. ½ E., if the bearings can be taken exactly, which is difficult in the night; but there is not room to work in this narrow channel. The outer part of the shipping bearing N. by E. ¼ E., or on with Cross Island, is also a good mark for running up with, when all the ships are moored inside the Middle Ground Shoal, but this is not always the case; as some ships, when the harbour is crowded, moor to the northward, in the *stream* of that shoal. It would be imprudent for a stranger to pass within the Middle Ground Shoal to the shipping, and no marks are discerned in the night, to lead him round the outside and north end of it; he ought therefore to anchor before the light is brought to bear W. S. W., or if needful, this may be done farther out, between the Sunken Rock Shoal and the entrance of the harbour, where the sea is broken by the reef projecting from Old Woman's Island; but farther up, above the Sunken Rock Shoal, it is more smooth.

and sail to the shipping.

Caution requisite.

The bearings of the Light or Lighthouse, and south brow of Caranja Great Hill, which have been given as essential marks for guiding a ship into the entrance of the harbour in the night, will answer equally well in the day; and when approaching the Sunken Rock Shoal, bring Mazagon House or Hill half a point open with the outer bastion of Bombay Castle, which will lead you outside of that shoal, and directly between the Middle Ground Shoal and Dolphin Reef, to the shipping, in the harbour. If Mazagon Hill is not distinctly seen, and the wind be fair, bring the flagstaff of Bombay Castle to bear North, which will carry you outside of the Sunken Rock Shoal, and just clear of the Dolphin Reef to the shipping in the harbour. With the flagstaff of the castle bearing north, you pass near the outer edge of the Dolphin Reef, and when it is N. N. W. ¼ W. you are near the inner part of the Middle Ground Shoal.

To steer, and sail to the moorings in the day time.

When the wind is northerly, ships generally work up between Caranja Shoal and the Middle Ground Shoal, then pass round the north end of the latter, in proceeding to their moorings, which is the most convenient method with a northerly wind and flood tide. The channel outside the Middle Ground Shoal, between it and the north part of Caranja Shoal, is about 1¾ mile broad.

## 6th. TO APPROACH THE HARBOUR IN THE S. W. MONSOON.

A SHIP steering for Bombay Harbour, from the middle of May till August, may sometimes have steady gales and clear weather, until she get within 25 or 30 leagues of the coast; but cloudy weather, with rain, and squalls, may be expected on the bank of soundings, as

State of weather off Bombay harbour in the S. W. monsoon.

she advances near the land. In June and July, more particularly when the S. W. monsoon blows in full force, such weather is frequently experienced, precluding observations; she ought therefore, to have good topsails and courses bent, that she may haul off and keep at a reasonable distance from the land, in case dark blowing weather should prevent the lat. from being correctly ascertained; for in dark stormy weather, it would be imprudent to run for the harbour, if the lat. is not obtained by observation of sun, moon, or stars.

Snakes are seen when in soundings.

When a ship has got soundings in the S. W. monsoon on the edge of the bank, large snakes will be perceived if a look out is kept for them; these diminish in size, as the depths on the bank decrease, in running toward the land. If not exactly certain of the lat., it will be prudent to keep in from 18° 20′ N. to 18° 30′ N. and endeavour to get soundings on DIRECTION BANK to the S. Westward of Kanary, for a guide; which has on it from 22 to 28 fathoms, course sand and small shells, with 30 and 32 fathoms mud within it:—But on the parallel of Kanary, the soundings decrease very regularly in steering to the eastward.

Dangerous to get to the northward of the harbour.

During the early part and strength of the S. W. monsoon, great care must be observed not to get to the northward of the entrance of the harbour, for then, the current frequently sets along the bank toward the Gulf of Cambay; and should a ship get to the northward of the harbour late in May, June, and July, she may find it very difficult at times, if not impossible, to work round the S. W. Prong.*

How to approach it.

Therefore, in these months, a ship should steer direct for Kanary, allowing for a northerly set, and endeavour to make it bearing between E. and S. E., taking care to borrow a little either way as prudence may dictate and circumstances require, to carry a fair wind in entering the harbour. Should the wind incline to blow in squalls from West or W. N. W., take care not to run close in with the land to the southward of Kanary, as there might be difficulty in weathering that island with these winds, which are sometimes experienced in June and July, but more to be expected in August. In this month and September, the squalls come mostly from West and W. N. W., and the freshes from the rivers and Gulf of Cambay set to the southward; it is therefore, not so dangerous at this late period of the season, to get to the northward of the entrance of the harbour, although it is still prudent to fall in with Kanary bearing to the southward of East, that no time be lost in entering the harbour.

Period of the setting in of stormy weather.

It has been observed at Bombay, that the first stormy weather of the S. W. monsoon seldom comes with the full moon springs, but generally during the dark nights. Although southerly winds prevail greatly after the middle of May, the stormy weather and rain most commonly do not set in until the dark nights, sometime between the 4th and 15th of June. From the 8th of this month to the 15th or 20th of July, the weather is in general most unsettled and severe; hard squalls, much rain, and dark cloudy weather, may then be frequently expected in the vicinity of Bombay Harbour.

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## *DIRECTIONS to WORK OUT of BOMBAY HARBOUR in the S. W. MONSOON, and to SAIL Southward to the South COAST of CEYLON.*

Spring tides most favorable for

DURING THE S. W. MONSOON, the spring tides are most favorable for working out of Bombay Harbour; for the freshes produced by the rains, set then strong out of Penn

* By getting to the northward of the harbour in June, some ships have been driven on shore in Back Bay; the Shah Byramgore, in a heavy gale that set in after she had worked out of the harbour, was forced to the

River, directly between Tull Reef and the S. W. Prong to the westward, which greatly assist a ship in working out:—Whereas, the ebb tide is weak at the quadratures, with baffling light winds intervening between the squalls, and a heavy sea rolling in, which frequently prevents ships from getting an offing. Some ships have worked out on the neap tides to 18 fathoms, and were driven with a heavy swell during light baffling winds, back again into the harbour. working out of Bombay Harbour.

A large ship proceeding to sea, should have up her main top gallant mast with the sail, for it will be found very useful in assisting her to obtain an offing, when intervals of light breezes are frequent between the squalls. And all ships, sailing from this harbour from the middle of May to September, ought to have strong sails bent. A caution.

In working out of the harbour in June and July, or in blowing unsettled weather, be sure to keep the entrance open after the pilot leaves you; by working with the Light or Lighthouse *whilst visible*, bearing from N. ½ E. to N. N. E. ½ E., the entrance of the harbour will then be retained open, into which the flood tide and swell will drive you if there is little wind, and prevent you from being drifted to the northward of it, or from being necessitated to anchor outside. This can never be done in the S. W. monsoon without the risk of losing the anchor, and probably greater loss may be sustained. When outside of Tull Reef, the water will deepen in standing to the N. Westward near the S. W. Prong, and will shoal in standing to the southward, if you approach the Flat off Kanary. In June and great part of July, as the squalls come mostly from W. S. Westward, work to the southward of the entrance of the harbour with the ebb; the following flood will not be then so strong felt as near the reef, and a considerable stretch may be made to seaward if the wind will admit, taking care not to get to the northward of the S. W. Prong, by keeping the Lighthouse to the northward of N. E. by N. After getting into 20 or 22 fathoms water, you may continue to stand along the coast to the southward, if the depth does not decrease, observing to make a stretch to the N. Westward at times when the wind is favorable, until you get into 35 or 40 fathoms; and with safety you may then proceed to the southward, occasionally sounding, to make certain that the depth does not decrease. How to work out of the harbour.

In August, it is seldom difficult to get an offing, for the squalls draw to the northward of west, and the freshes in general set strong out of the rivers, which enable ships at times to stand from the harbour direct to the southward without tacking; this has also happened in June, and July, though seldom. In August, it is not so dangerous to get to the northward of the S. W. Prong, although still advisable to keep the entrance of the harbour open. In this month, you need not be particular to obtain a great offing in the parallel of Kanary, but after rounding that island, may stand along the coast to the southward, if the wind will permit you to increase the depth of water; otherwise, a tack at times must be made, until it is increased to 30 or 35 fathoms.

Ships passing along the edge of the bank of soundings in the strength of the S. W. monsoon, should be always prepared for stormy weather, because the squalls are often of long continuance and very severe;* at other times, fine weather may be experienced, with intervals of light breezes.

northward of it, and driven on the rocks near Versavah, where most of the crew perished, and the ship was dashed in pieces. Other ships have been in distress, and with great exertions got round the prong, into the harbour. An American ship bound to Bengal had a narrow escape; having experienced strong easterly currents, she fell in with the high land of St. John, *when near Point Palmiras* in the Bay of Bengal by dead reckoning: This happened when the S. W. monsoon was blowing strong late in June. Being a fast sailing ship, she cleared the shore under a press of canvass, passed Bombay, stood to the southward, and arrived safe at Madras.

* Late in June, some ships in 45 and 50 fathoms water, have been unable to make any progress to the southward for several days together, by the wind blowing in severe squalls from S. Westward with a high sea; others with indifferent sails bent, after splitting them, have been nearly driven on shore, and two fine ships were really driven on it, and wrecked several years ago. By carrying a press of sail during the squalls, many ships have lost a lower yard or topmast; it is therefore prudent, when the weather seems to be setting in severe, for a large ship to make snug, by taking a reef in her courses.

General direction of the coast.

From Bombay Harbour to Geriah, the direction of the coast is S. by E., the latter being a projecting part of the land; afterward, its general direction is about S. S. E. to Quilon, and from thence more easterly to Cape Comorin. The best track after getting an offing, is to keep on the edge of the bank of soundings, in from 40 to 60 fathoms, particularly in June and July, it is prudent to keep well out from the coast. It is of little consequence whether a ship get out of soundings or not, until she approach the head of the Laccadiva Islands, but after reaching 12½° or 13° N. lat., care must be taken to obtain soundings, if not certain of your position by chronometer, that you may be enabled to shape a course to pass inside of Elicalpeni Bank. This bank lies in lat. 11° 16′ N. having only 6 and 7 fathoms rocks in some places, and is distant from Mount Dilly 27 leagues; a ship would strike on it when the sea runs high in the S. W. monsoon, it ought therefore to be avoided. About midway between Mount Dilly and this rocky bank, there are soundings 65 and 70 fathoms, but a little farther out, no ground.

How to proceed along the edge of soundings to the southward.

As you proceed to the south, the wind will in general become more favorable, veering to W. and W. N. W., with a current setting southward at the rate of 15 or 20 miles per day, and sometimes stronger. On the southern part of the coast, between Cochin and Cape Comorin, the southerly currents and W. N. W. winds prevail greatly, part of July, August, September, and part of October. Having entered the channel between the Laccadiva Islands and the coast, continue to steer along on the edge of soundings, or should you get off the bank it is of no consequence, as the soundings do not extend so far from the coast to the southward of Callicut, as they do farther to the northward. The land may also be approached with greater safety, the squalls being less severe and the wind more favorable, but it is still advisable not to come under 30 fathoms, unless you are to touch at some place on the coast. This ought to be done with caution, for a ship intending to stop at any port on this coast in the S. W. monsoon, should anchor a great way out, prepared at all times to put to sea on the appearance of threatening weather.

Should you get observations for the latitude and for chronometer, in proceeding from Bombay to the southward, and your distance from the land be correctly ascertained, it will seldom be requisite to sound, particularly when you have passed Elicalpeni Bank. You may then steer about S. S. E. and S. by E. ½ E., as circumstances may direct; keeping from 6 or 7, to 12 or 14 leagues from the coast, in the early part of the monsoon, until you are abreast of Cape Comorin; but in steady settled weather in August, it may be approached within 4 or 5 leagues at discretion.

To cross the Gulf of Manar,

When abreast of Quilon, the coast takes a direction more to the S. E., and you may from thence, shape a course for the south end of Ceylon, taking care to allow for an easterly current which sometimes sets into the Gulf of Manar.* Point de Galle bears from Cape Comorin S. 53° E. distant 66 leagues; being abreast of the latter, or in soundings between it and Quilon, do not steer more easterly than S. E. at the utmost, until you get on the parallel of Point de Galle, unless your situation is known by chronometer. When bound to Malacca Strait, or other parts to the eastward, it is not necessary to pass close to the south part of Ceylon; but if bound to the Coromandel Coast, you ought to make Point de Galle or Dondre Head, and after rounding the Great and Little Basses, steer along the east side of the island, keeping within a moderate distance of the coast to Point Palmyra; then stretch over to the N. Westward for Point Calymere, or the land about Negapatam.

and proceed round Ceylon to the Coast of Coromandel.

* The Gunjavar crossing from Cape Comorin in August, bound to China, experienced a current setting into the gulf, and having steered mostly S. E. by E. she made the Haycock bearing E. N. E. ½ E. at day light; falling little wind and a heavy swell, she was obliged to anchor in 34 fathoms about 3 miles off shore; shortly after, squally weather set in at S. S. W., which forced her to carry a press of sail, whereby she broke some of the chain plates, twisted the head of her mainmast, and was four days in beating round Point de Galle, sometimes under close reefed topsails.

# *DESCRIPTION of the WESTERN COAST of INDIA, from BOMBAY to CAPE COMORIN.*

## 1st. THE COAST OF CONCAN, WITH SAILING DIRECTIONS.

ALTHOUGH the western side of the Peninsula of Hindoostan, is generally called the Malabar Coast, this appellation belongs properly to the southern part, for the whole extent comprehends three provinces, the northernmost of which, is CONCAN, extending from Basseen River to Cape Ramas; the north part of it has been already described, including Bombay Harbour. Coast of Concan.

COULABA ISLAND, in lat. 18° 37′ N. bearing S. S. E. from the Island Kanary, distant 7 miles, is situated near the shore at the entrance of a river: these two islands and Henery, belong to the Mahratta pirates, and are well fortified. Their vessels lie under Coulaba, in 3 fathoms water. Coulaba Island.

CHOUL HARBOUR, in lat. 18° 32′ N. is 5 miles farther to the S. Eastward, having 3 fathoms water at the entrance, which is protected by a fort on each side, and inside there are 6 and 7 fathoms. This harbour is also possessed by the Mahrattas, and not frequented by Europeans. Choul Harbour,

About 3 miles S. S. Westward from Coulaba Island there is a rocky bank, part of it dry at half tide, having 5 fathoms at low water outside, and 3 and 4 fathoms within it; a ship ought not, therefore, to approach the shore here in the night, nearer than 6 fathoms at low water. and the adjacent coast.

The high land of Choul, is a piece of even land forming in a bluff to the northward; a little farther toward Bombay, the south part of the high land of Tull appears in undulating hummocks. Off Choul, the fishing stakes lie out in 6, 7, or 8 fathoms water, in the fair season.

RAJAPOUR HARBOUR, in lat. 18° 16′ N., is distant 5½ leagues from Choul entrance; the coast between them, extending nearly north and south, with some small windings, is safe to approach, the soundings 4 and 5 fathoms ½ or 2 miles from the shore. This is an excellent harbour, without any bar, having from 4 to 5 fathoms in the entrance, and the same depths inside, at low water, where there is shelter from all winds. It is defended by 2 fortified islands, Gingerah in the entrance, and Cassah a little farther out. The channel is to the southward of these islands, but there is 4 fathoms water between them, and also betwixt Cassah and the northern shore. Rajapour Harbour.

The south point of the harbour is called Rajapour Point, off which, at more than a mile distance, lies a reef of rocks partly dry at low water, called the Whale, having 5½ fathoms soft ground close to its north end, from whence Gingerah Fort is just open with Rajapour Point bearing N. E. by E. It is near a mile in length, shelving gradually at the south end, and is from 200 to 300 yards broad, having a channel of 4 fathoms inside. A large ship ought not to approach this danger nearer than 8 or 9 fathoms in the night, for the rise of tide on the springs is 12 feet, and flows to 11 hours on full and change of moon.

COMRAH BAY, is 6 miles distant from Rajapour Point, the coast extending nearly south, and may be approached to 5 fathoms; in this bay, a ship may anchor in 4 or 5 fathoms, within 500 yards of the shore, sheltered from N. W. winds. From this place, the Comrah Bay.

coast takes a direction nearly S. S. E. 6 leagues to the entrance of Bancoot River, and is safe to approach to 5 fathoms. To the southward of Comrah Bay, there is a rock near the shore, and to the northward of Bancoot, is Severdon small bay and creek, affording no shelter, the latter only navigable by boats near high water.

Opposite to this part of the coast, at the distance of 8 or 9 leagues, in lat. about 18° N. lies the southern extremity of DIRECTION BANK, which extends nearly parallel to the coast to 18° 40′ N. This bank is generally composed of sandy bottom, mixed with small shells; the soundings on it irregular from 20 to 26 fathoms on the southern part, from 24 to 28 on the middle part, and from 27 to 36 fathoms on the northern part. Inside of its southern extreme, thereare from 27 to 25 fathoms soft ground, decreasing regularly toward the shore; inside the middle part 30 and 32 fathoms, and the depth inside the northern part nearly the same as on the bank, but all the soundings within it are soft, and decrease gradually to the shore.

Bank to the southward of Bombay.

The broadest part of this bank appears to be in lat. 18° 17′ N. where on its inner edge, there is 24 fathoms 7 leagues from the land, and from 20 to 26 fathoms at the distance of 14 leagues from it, where the water deepens suddenly from 24 or 26 to 43 and 44 fathoms.

From the island Kanary to Bancoot, the depths are 15 and 16 fathoms from 3 to 4 leagues off shore; the land to the southward of Choul, is generally high, uneven, double land.

Geo. site of Bancoot River, and Fort Victoria.

BANCOOT RIVER, in lat. 17° 57′ N. lon. 73° 9′ E. or 11½ miles E. from Bombay Castle, by chronometer, has 10 feet on the bar at low water, and the rise of tide is 11 feet on the springs—high water at 11 hours on full and change of the moon. The channel is on the eastern side of the entrance of the river, but being narrow, ought not to be approached without a pilot. Fort Victoria, belonging to the English, is situated on a high barren hill, of reddish appearance, on the south side of the entrance, but is not easily distinguished, as it resembles a tuft of trees; the north side is formed by a round mount close to the sea, called Harrissa Hill, which is conspicuous when seen from the southward, and generally a shade darker than the other land. Inland, about E. by N. from the entrance of the river, there is a long piece of flat table land, by which, in clear weather, this place may be easily known from the offing, and all the land is high on both sides of the river. A ship may anchor in 5 fathoms, at low water, abreast the fort, in fine weather, and get supplied with poultry, bullocks, &c. Off this place, the tides begin to be felt a little, increasing in strength abreast of Choul, when a ship keeps near the shore in proceeding to the northward.

In the latitude of Bancoot River, the bank of soundings extends 40 leagues from the coast.

Severndroog Island.

SEVERNDROOG, a low island, with a fortified wall all round, is situated near the shore, in lat. 17° 47½′ N., bearing S. S. E. from the entrance of Bancoot River, distant 4 leagues. The coast between them is clear to 5 fathoms, but under that depth there are a few patches of hard ground with 3 fathoms on them, situated to the southward of Bancoot River, and near the Village and River Kelsey, which is 4 miles from the former place. Severndroog, and the adjacent forts, are in possession of a nest of pirates.

Angenweel, and the neighbouring coast.

ANGENWEEL FORT AND RIVER, in lat. 17° 34½′ N. bears about S. by E. from Severndroog Island 4 leagues; between them, the coast is high and safe to approach to 5 or 6 fathoms, these depths being very near the shore in some places. Nearly midway there is a point of land, formerly called Cape Z, and close to it the Village Bogbrandie; a little nearer Angenweel is the small Bay and Village of Colter, where there is a rivulet of good water. Angenweel river is of considerable size, having inside the fort a good harbour for small vessels. From this place, the coast extends about S. by E. 3 leagues to Boria Point, having 5 and 6 fathoms regular soundings very near it.

BORIA POINT, in lat. 17° 25′ N. is a high, round, bluff headland, with a small pagoda on its highest part, and forms the northern extreme of a large bay. This point is steep, 6 and 7 fathoms, being very near the shore. Along this part of the coast, the land appears broken by several bluff points, with small bays between some of them. Boria Point, &c.

ZYGHUR POINT, in lat. 17° 16′ N. lon. 73° 17½′ E. or 20 miles E. from Bombay Castle by chronometer, bears S. by E. from Boria Point, distant 3 leagues. The bay formed between Boria and Zyghur, is near 2 miles deep and 6 miles broad, with regular soundings 5 and 6 fathoms in it, except at the entrance of Zyghur River, opposite the fort, a reef of rocks projects about half a mile from the northern shore. The fort is near 2 miles inside the outer point, on the southern shore of the bay, and the bar, having 2½ fathoms on it at low water, is close under the fort, within a cable's length of which is the best channel. Within the Fort Point, the water is deep on the south side of the river, forming a safe harbour for shipping against all winds; but the natives are jealous of Europeans, permitting no strangers to enter this harbour. Zyghur Point, in coming from the southward, has a level appearance; it is of moderate height, and covered with trees. Zyghur Bay, geo. site of point and harbour.

From Zyghur Point, the coast extends about S. by E. ½ E. 7 miles to a bluff headland, having under it to the northward a cove or small bay, which seems to afford good shelter to boats or small vessels against southerly winds. About 7 miles farther, nearly S. by E., there is another headland, of a high round form, lighter in colour than the other land, and appears like an island when seen from northward or southward. On the north side of this headland there is a large bay, affording shelter from southerly winds; and on the south side, between it and Rettna-Geriah, lies another bay, about 1½ mile broad and 2 miles deep, with 5 and 6 fathoms sandy bottom. The coast from Zyghur Point to Rettna-Geriah.

RETTNA-GERIAH, (or False Geriah) in lat. 17° 2′ N. is a neck of land fortified all over, and forms the south side of the bay last-mentioned; the landing-place is on the north side of the fort, where there seems to be shelter for small vessels during the S. W. monsoon. When viewed at a distance, this place appears like an island,* flat and level like a wall, excepting the northern part, which is highest, and covered with trees. The natives do not permit Europeans to touch here. Rettna-Geriah, the bays and coast adjacent.

On the south side of this neck of land, a large bay is formed, from whence a river capable of receiving small vessels over its bar at high water, extends a great way inland, having on the north side of the entrance, a small round tower on the brow of a hill. At the south extremity of this bay there are some rocks above water, about half a mile from the shore, and a little farther southward, a remarkable large Banyan Tree† may be discerned on a hill near the sea. To the southward of this, and 8 miles from Rettna-Geriah, there is a small bay on the south side of a point of land.

RADJAPOUR FORT, in lat. 16° 47′ N. bears from Rettna-Geriah about S. by E. distant 5 leagues, and is situated on a barren hill, on the north side of the river, which trends to the north eastward. The hills on the south side are covered with trees, and close by the river, on this side, stands a remarkable white pagoda, from whence Radjapour Point was called Pagoda Cape in some charts. Radjapour.

GERIAH POINT, AND FLAGSTAFF, is in lat. 16° 31′ N., and the fort at the entrance of the harbour about a mile farther northward. The point, which forms the south Geo. site of Geriah harbour.

* It is said to be insulated at high-water, the tide flowing over the low neck of land that joins it to the main.

† This Banyan Tree is ancient, having long been conspicuous to navigators. It is placed on several old charts, one of which is that published by John Thornton, in 1700.

side of the entrance is high and bluff, bearing south from Radjapour Point 5½ leagues, and is 27½ miles east from Bombay Castle, or in lon. 73° 25′ E. This is a projecting part of the coast, the land both to the northward and southward forming concavities. The flag-staff stands on the hill to the southward of the fort, and may be seen at a considerable distance. This place belongs to the Mahrattas, and although not frequented by Europeans, the harbour is excellent, the vessels in it being land-locked and sheltered from all winds. There is no bar at the entrance, the depths there, being from 5 to 7 fathoms, and from 3 to 4 fathoms inside, at low water; the rise of tide is about 6 or 7 feet.

Soundings and general aspect of the coast.

From Zyghur, to this place, the soundings extend about a degree from the land; about 6 or 7 leagues from it, the depths are 30 and 32 fathoms; about 2 leagues off, 14 or 15 fathoms; and in many places, particularly about Rettna-Geriah, and from thence southward, there are 8 and 9 fathoms within a mile of the shore. The coast is in general, moderately elevated, but inland the country is higher.

Angria's Bank.

ANGRIA'S BANK, bears west from Geriah, distant 24 leagues, and extends from 16° 18′ to 16° 38′ N. lat., being about 10 miles in breadth east and west. The depths generally found on it, have been from 13 to 15 fathoms rocky bottom, or hard ground. Although 12 fathoms was the least water that Lieutenant Mc. Cluer found in traversing over it, and the depths mostly regular, it seems probable there may be rather less on some parts of this bank, considering its extent.

It is steep to, all round, but 3 leagues east from its inner edge, there are soundings of 110 and 100 fathoms, on the verge of the bank extending from the coast.

Dewghur Harbour.

DEWGHUR HARBOUR, in lat. 16° 23′ N. bears about S. E. from Geriah Point, distant 4 leagues, the coast between them is bold, having 8 and 9 fathoms within less than a mile of the shore. This harbour has 3 and 4 fathoms water in it, where a ship might lie sheltered during the S. W. monsoon, and is formed close under the N. E. point of the island on which the fort is situated; this island is on the south side of the entrance of the river, and appears as part of the main, being nearly joined to it. As rocks project a considerable distance from the north point of the entrance, a ship running in here for shelter or otherwise, should after getting into 7 fathoms, borrow near the Fort Point, and anchor under it in 4 or 3½ fathoms. The river is broad at the entrance, and is said to extend a great way inland.

Atchera River.

ATCHERA RIVER, in lat. 16° 11′ N., bears S. S. E. from Dewghur about 4 leagues; it is navigable by small vessels, there being 7 and 8 feet water on the bar. On the south side there is a white pagoda, and the land there, is lower than on the north side of the entrance, by which this place may be known. The coast here is safe to approach within a mile of the shore, or to 5 fathoms, as far as the northernmost limit of the Melundy Rocks.

Melundy Island, and the opposite coast.

MELUNDY *FORTIFIED* ISLAND, in lat. 16° 3′ N., about 3 leagues S. ½ E. from Atchera River, is low and not easily distinguished from the offing. About 3 miles to the northward of it, there is a small islet about a mile from the shore, but chained to it by rocks, and to the southward straggling rocks extend a great way, joining to Newtee Point. Exclusive of the Island Melundy (or Malwan) there is a fort on the main-land near it, which protect these Malwan pirates, a cruel horde who reside here, and are the dread of defenceless trading vessels. They have several large gallivats, with one sail on each. In passing this place, a large ship should not come under 12 or 13 fathoms, for 10 and 11 fathoms is close to the edge of foul ground.

Newtee Point, and Channel between it and the

NEWTEE POINT, AND FORT, in lat. 15° 56′ N., about 8 miles S. S. E. from Melundy, are directly opposite to the Vingorla Rocks; between the point and Melundy, the

coast is rocky and unsafe, and the channel inside the Vingorla Rocks, should not be used except by small vessels, the position of the rocks bounding it not being sufficiently known*. The depths of water in this channel, are from 6 to 8 fathoms, and it is 1½ and 2 miles broad.

VINGORLA ROCKS, or Burnt Islands, extend from lat. 15° 51′ N., about 5 miles to the northward, and are distant from Newtee Point from 2 to 5 miles; some of them are 15 or 20 feet above water, having a white appearance when the sun shines on them, others are even with the water's edge. There are upwards of 20 of these rocks visible when near them, and those of the southernmost group seem connected by a reef. By bringing the outermost rock to bear W. N. W. or W. by N., a ship may anchor in 12 or 13 fathoms soft mud, and be well sheltered during a north-wester. Vingorla Rocks.

A ship passing here in the night, should not come under 16 or 17 fathoms, for these rocks are steep to, on the south and west sides, having 15 fathoms very close to them. How to pass them in the night.

RAREE POINT, AND FORT, in lat. 15° 44′ N., bear about S. S. E. ½ E. from Newtee, distant 5 leagues; the coast between them is safe to approach, having a sandy beach and irregular soundings within a mile of the shore; and about mid-way, is the small river Vingorla. Raree Fort being situated on an eminence near the point, is conspicuous from seaward; several rocks project from the point to the westward, 2 of them above water lie to the S. Westward of it more than a mile distant, having 7 fathoms close to them, and 5 or 6 fathoms inside. On the north side of the point, there is a small river, navigable by boats of considerable size. A ship should not in the night, come nearer to this place than 10 fathoms. Raree, and the coast near it.

CHIRACOLE FORT, in lat. 15° 41½′ N., and about 4 miles to the S. E. of Raree Point, stands on the brow of a hill on the north side of a small inlet, but is not very conspicuous. Chiracole Fort.

CHAPRA FORT, in lat. 15° 36′ N., and 2 leagues farther to the S. S. Eastward, is more readily discerned from the offing, being situated on a high bluff point at the south side of a small river, with hilly land adjacent to the sea. These 2 forts belong to the Portuguese, who seldom shew their colours to ships passing. Chapra Fort.

From Raree Point to the bluff point of Algoada, the coast lies about S. S. E. 5 leagues, having 6 and 7 fathoms water about 2 miles off shore. The soundings between Geriah and Goa Bay, are 15 and 16 fathoms about 2 leagues off, 30 and 32 fathoms from 6 to 7 leagues off, and the edge of the bank of soundings is in general from 14 to 18 leagues off shore.

ALGOADA POINT, in lat. 15° 29½′ N. lon. 75° 53½′ E., forming the northern extremity of Goa Bay, is a level headland of moderate height, with an old lighthouse on it and a small fort; but the principal fort is situated close to the sea, on the S. E. side of the headland, where there is a well of excellent water, from which the shipping are supplied. The common anchorage is abreast the fort, with the flagstaff bearing from N. N. E. to N. N. W., at the distance of ¼ to ¾ of a mile, in 4½ or 4¾ fathoms at low water, soft mud; farther in, the depths decrease, the water being shallow all over the bay. Some rocks mostly above water, project a small distance from Algoada Point to seaward, but this is the safe side to borrow upon. Geo. site of Algoada Point, and description of Goa Bay, & the coast in its vicinity.

* The ship Margaret working through this channel struck on a rock, which made it necessary to put her under a complete repair on her arrival at Bombay.

Nostra Senhora de la Cabo, a large monastery generally very white, is situated on the summit of the bluff point of land about 2½ miles to the S. E. of Algoada, which forms the south side of the bay. This building having an elevated site, and surrounded by trees, is conspicuous from seaward, by which Goa Bay may be easily known. The monastery point is surrounded by rocks called Cabo Reef, projecting out nearly ½ a mile, with 5½ fathoms water close to, making it necessary to keep nearest to Algoada, in passing to, or from the anchorage.

The tide rises about 5 feet perpendicular in the springs, at the Bar of Goa River, high water at 11¾ hours, on full and change of moon; in the road, the flood is hardly perceptible there being generally an outset from the river.

The bar at the entrance of the river is about 2 miles to the eastward of Algoada Point, having 16 or 17 feet on it at high water spring tides, but the bottom about it, being hard and rocky, and the channel winding and intricate, a ship ought not to enter the river without a pilot.

After the early part of May, it is considered unsafe to remain at the anchorage in the road; the Portuguese then send their large ships that cannot go into the river, to Marmagon, where they are sheltered from the S. W. monsoon by mooring close under the N. E. side of that peninsula; although a great swell, at times, rolls into the anchorage.

MARMAGON, OR MARMAGOA PENINSULA, is a level piece of land, (appearing like an island) nearly of equal height to that of Algoada and Nostra Senhora de la Cabo. It breaks off almost perpendicularly at both ends, the north point being that called Marmagoa Point, and is distant from Algoada 4 or 5 miles to the southward.

Directions for sailing into Marmagoa Road.

To sail into Marmagoa Road, in coming from the northward, give a good birth to Cabo Reef, (which fronts the monastery at a small ½ mile distant from the Cape) by not bringing the Buffalo Rock (called also Camberee Isle) farther to the westward than on with the eastern extreme of the middle or largest St. George's Island, or between the inner and largest Island, which will lead clear of Sounchee Rocks, situated on the S. W. extreme of Cabo Reef.

Steer to the southward until Rasseen Hill is on with the north extreme of Secretaries Island, (called also Ignacia Island) which is the leading mark till up with Marmagoa Point. Or if Rasseen Hill is not seen, steer to the eastward, keeping Chicklee Point on with the centre of Secretaries Island, the other half of the island being shut in; and after passing the north point of Marmagoa, steer eastward for the Road, and anchor in 4 or 3½ fathoms, with the flagstaff on the Hill bearing about S. W. by W. to W. S. W. within a ¼ of a mile of the fort.*

To sail into it in the S. W. monsoon.

Should a ship be disabled, and obliged to run for Marmagoa Road in the S. W. monsoon, and thick weather prevent the marks from being seen, or if those on board are unacquainted with the place; observe, that the outer part of the peninsula of Marmagoa is about 3 or 3½ miles N. by E. ½ E. from the outermost St. George's Island, and that the peninsula has a 3 fathoms shoal fronting it at the distance of a small ½ mile, which shoal is about the same distance N. ½ E. from the Buffalo Rock, having close to it 5½ fathoms all around. Amee Shoal, having also 3 fathoms rocks on it, bears N. by W. from the outer point of Marmagoa 1 mile, and between these 2 shoals is formed the fair channel leading to the Road, with depths in it generally from 5 to 6 fathoms soft mud. When St. George's Islands are seen, steer for the N. W. point of Marmagoa, taking care not to approach it nearer than a mile till it bears to the Eastward of E. N. E.; and when the point is bearing any way be-

* These directions are taken from the excellent survey of Marmagoa, the adjacent shoals, and Goa River, by Captain David Inverarity, which he presented to me, and it is now engraving under the patronage of the Court of Directors, of the East India Company.

BOMBAY BRANCH OF THE

tween E. by N. and S. E. the channel is open, and a ship may steer directly toward it, then sail along the shore in 5 or 4½ fathoms to the anchorage in Marmagoa Road. Here, supplies of various kinds may be got from the Arsenal of Goa, which in the S. W. monsoon, are brought round by an inland navigation, as the bar of Goa River cannot be passed with safety in this season.

CITY OF GOA, situated on the south bank of the river, about 7 miles from the entrance, is the capital of the Portuguese settlements in India, and the residence of the viceroy. It was formerly a place of great trade, but at present the inhabitants are very poor, and have little industry or inclination to trade, subsisting chiefly on fish and vegetables. City of Goa.

Ships touching at this place, get supplied with excellent water from the well at Algoada; they may also at times procure some poultry and vegetables, and in May, fine Mangoes, and other fruits. Refreshments

A convenient birth for watering at Algoada, is to bring the flagstaff and lighthouse in one bearing N. N. W. ¼ W., and anchor in 4¾ fathoms at low water, about 2 cables lengths, or rather more, from the flagstaff. and anchorage.

The outermost or west St. George's Island, in lat. 15° 22′ N. bears about true S. ¼ W. from Algoada fort, distant 8 miles, and is of considerable height, in the form of a pyramid, having the Middle or Largest Island touching it, and extending to the eastward about ¾ of a mile: the innermost or east island, lying to the N. E. of these, is level and not so high. Between this and the other 2 islands, there is a channel with 4, 5, and 6 fathoms, which is unsafe for large vessels, the bottom being mostly uneven and rocky; and to the southward of the outer island there are 2 rocks, one of them covered at high water, with the Sail Rock about a ¼ mile outside of them, and nearly ½ a mile off the island. About a mile to the N. W. of the inner St. George's Island, near Marmagoa, there is another rocky islet called the Buffalo, with a 3 fathoms bank bearing north from it, which ought not to be approached nearer than 7 or 8 fathoms. But a ship passing St. George's Islands in the night, should not come under 16 fathoms, for 14 fathoms is close to the southernmost rocky islets, mentioned above. St. George's Islands,

Directly east from the outer large island, there is a bay with regular soundings, within ½ a mile of the shore, affording good shelter from N. W. winds. The country inland, about Goa, is much more elevated than the head-lands fronting the sea, which prevents the latter from being discerned at a great distance in the offing. and the adjacent coast.

A ship bound to the anchorage from the southward, after rounding St. George's Islands, should steer along shore, not coming under 8 or 9 fathoms until she is abreast of the Monastery Point, taking care to give a birth to the reef projecting from that point, by not coming under 7 fathoms when abreast of it, nor approaching the point nearer than ¾ of a mile, if working into the anchorage of Algoada. To sail to the anchorage at Algoada.

CAPE RAMAS, in lat. 15° 5′ N. lon. 74° 6′ E. or 1° 8½′ E. from Bombay by chronometer, bears about S. S. E. ½ E. from Marmagoa Point, distant 7½ leagues; the coast between them is low and woody, with a sandy beach and some Portuguese churches, the soundings regular, and the shore safe to approach to 7 or 8 fathoms: the country is high inland. About 2 miles to the N. E. of the cape, is the entrance of Salset River, having a bar with 8 or 9 feet water in the channel, inside of which, the river separates into 2 branches; that extending to the N. Eastward, is said to join the inlet that divides Goa Island from Marmagoa Point, by which this part of the coast has generally been called Salset Island, or Marmagoa Salset. Cape Ramas is a high bluff headland, forming in 2 level points when seen either from the northward or southward; that called the False Cape, is highest and first discernible; the other less elevated, forms the extremity of the True Geo. site of Cape Ramas; coast adjacent.

Cape, on which is a small fort belonging to the Portuguese, this being the southern limit of their districts. The soundings about the cape, are very regular over a soft bottom, and it is steep to, having within a ¼ of a mile of the extreme point, 9 fathoms mud.

It projects considerably, by which a bay is formed on each side; that on the south side, affords shelter from northerly winds.

Between Cape Ramas and Carwar Bay, the coast is undulating, forming several small bays, unfit for shipping; the soundings are regular to 6 or 7 fathoms, from 1½ to 2 miles off shore.

## 2d. THE COAST OF CANARA, WITH SAILING DIRECTIONS.

THIS COAST extends from Cape Ramas nearly to Mount Dilly, and is at present subject to the English.

Geo. site of Carwar Head.

The outermost Oyster Rock, bears from Cape Ramas S. S. E. ½ E. distant 6 leagues, and is about 2 miles to the W. N. W. of Carwar Head. This headland in lat. 14° 47′ N. lon. 74° 16′ E. by chronometers, is high, and conspicuous in coming from the southward; it projects considerably, by which Carwar Bay is formed to the northward.

The Bay and and Oyster Rocks.

CARWAR BAY, extends from the head about 2 leagues to the northward, and is about 2 miles deep, having regular soundings in it from 6 to 4 fathoms. At the bottom of the bay there is a river, with the Fort of Carwar, or Sudasaghur, on the north side of the entrance; near which, there are 4 and 5 fathoms, within all the oyster rocks. Between the outer rocks and Carwar Head, and betwixt them and the inner rocks, the depths are from 5 to 7 fathoms. At the south part of the bay there is good shelter, and the bottom in general is soft mud. Batt, or Bell Cove, at the southeast side of the bay, is a small, but safe haven, where Indiamen used formerly to careen.

Batt Cove, was formerly considered a safe place to run into, if a ship happened to lose her anchors, the bottom being soft mud. In March, 1700, the Rooke moored in 5 fathoms at the south side of the bay, had a small sandy bay abreast bearing S. by W., Carwar River's mouth N. E. ¼ E. Variation 7° 50′ W. Captain Symonds, of the Rooke, describes the best passage into Carwar Bay, thus; to leave to the northward 2 of the oyster rocks which lie off the mouth of Carwar River, passing between these, and the *large* rock, which must be left to the south, together with a rock even with the water's edge that lies close to the north end of the latter, which must have a proper birth, by borrowing toward the 2 rocks on the north side of the passage.

The two outermost oyster rocks are high rocky islets, having 10 and 11 fathoms close to them, and are in one with Sudasaghur Fort bearing E. N. E. ¼ E. About 2 leagues outside of these rocks, the depths are 16 and 17 fathoms; from 20 to 22 fathoms 4 leagues off, and 25 to 27 fathoms 5 or 6 leagues off. Between Cape Ramas and Carwar Head, the depths are 14 and 15 fathoms about 2 leagues off shore. About 3 or 4 miles N. W. of the largest oyster rock, lies a sunken rock, upon which the sea breaks in the westerly monsoon.

Anje-Diva Island.

ANJE-DIVA* (ISLAND,) in lat. 14° 44′ N., distant about 2 miles from the shore to the southward of Carwar Head, is about a mile in length, and possessed by the Portuguese; it appears on the outside barren and rocky, but of a pleasant aspect on the opposite side next the main, where it is fortified by a wall and some towers. In case of necessity, a ship might find shelter under this island from the S. W. monsoon, there being 6 and 7 fathoms in the channel between it and the main land, and no danger but what is visible.

* Diva, i. e. Island.

Close to it on the outside, the depths are 10 and 11 fathoms, and 14 fathoms about 4 miles distance.

To the eastward of it, near the shore, are 2 small islets, and another about 4 miles to the S. East, distant nearly 2 miles from the shore.

MERJEE RIVER, in lat. 14° 30′ N. lon. 74° 31′ E. by chronometers, bears about S. E. ½ E. from Anje-Diva Island, distant 18 miles; the land between them is high, appearing like islands, and the coast safe to approach to 8 or 9 fathoms. The entrance of the river, is between 2 bluff points; that on the south side has the deepest water, close to which is the proper channel over the bar, where there are 2¾ and 3 fathoms water between the point and sand banks in the middle of the entrance, on which the sea generally breaks. A vessel proceeding into the river, having passed the sand banks at the entrance, must cross over to the north shore, but the channel is too narrow except for small vessels. Geo. site of Merjee River.

A convenient situation to anchor in the road, is abreast the point on the north side of the entrance, with it bearing N. E. distant 1 mile, and Fortified Island at Onore on with the southern extreme of the land S. by E. ½ E., in 5 or 6 fathoms water. Here, good water may be procured with facility after the rains, from a pool near the fine sandy cove, a little inside the north point of the bay, but in the fair season it is nearly dry. Firewood may also be cut, and rice purchased on moderate terms. Anchorage.

PIGEON ISLAND, in lat. 14° 3½′ N. lon. 74° 32′ E. by chronometer from Bombay, bears from Anje-Diva Island about S. S. E. distant 14½ leagues, and nearly south from the entrance of Merjee River, distant about 9 leagues. It is small, but high, of a round or oblong appearance, situated about 4 leagues from the continent, and may be discerned 8 leagues in clear weather; two small islets or rocks lie very near it, one to the eastward, the other to the S. Eastward. There are 20 and 21 fathoms water within a mile of the island bearing E. N. E., ships passing outside of it in the night, ought therefore not to come under 23 or 24 fathoms, which will be within 2 or 3 miles of it; about 3 or 4 leagues from it, the depths are from 30 to 32 fathoms. Geo. site of Pigeon Island.

HOG ISLAND, is high, of a pyramidal form, situated very near the main, directly east from Pigeon Island, distant near 4 leagues. The channel between these islands is very safe, with 15 and 16 fathoms near Pigeon Island, and 10 or 11 fathoms toward Hog Island and the main land.

ONORE, a place of considerable trade in pepper, rice, &c. is situated near the entrance of a salt water river between Merjee and Hog Island, and about 4 or 5 leagues N. Eastward from Pigeon Island. The entrance of the river, may be easily known by a level island with fortifications on it, generally called Fortified Island, which is in lat. 14° 19′ N. near the shore, about 1½ mile to the northward of the river. A ship may anchor in the road with the flagstaff of Onore bearing E. by N. or E. N. E., Fortified Island N. ½ W. or N. by W., and Pigeon Island about S. by W., distant from the shore 1½ mile, in 5 to 6 fathoms soft ground. Fresh water, is here very scarce. Onore and Fortified Island. Anchorage.

Between Onore and Hog Island the coast is high, and may be approached with safety to 8 fathoms water; but to the southward of that Island, between it and Barsalore Peak, the coast ought not to be borrowed on under 9½ or 10 fathoms in the night, nor under 8½ or 8 fathoms in the day, for several straggling rocks under and above water lie at a considerable distance from the shore, having 8½ and 9 fathoms within ½ a mile of them. Between Hog Island and the main, there is a low rugged island, and several rocky islets lie near the shore to the southward. The coast from hence to Barsalore.

From Hog Island to Barsalore Point, the coast extending about S. S. E. ½ E. 6 or 7

leagues, forms some small bays; near the sea the land is generally low and woody, but very high in the country.

Geo. site of Barsalore Peak, and Bednore Mountains.

BARSALORE PEAK, in lat. 13° 50′ N. lon. 74° 58′ E., is a round mountain about 3½ leagues inland, having the high chain of Bednore Mountains for its base; about 6 miles farther to the southward, there is another mountain in lat. 13° 45′ N., which is also frequently set by navigators as Barsalore Peak. In clear weather, this part of the coast is discernible a great way at sea.

Cundapore River, and rocky coast adjacent.

CUNDAPORE RIVER, in lat. 13° 39′ N. lies to the southward of Barsalore Point, in a bay to the S. W. of the peak, near the entrance of which, several rocks project 1½ mile from the shore, having 6 fathoms close to them, and 8 or 8½ fathoms about a mile distant, hard ground. This river is only navigable by boats and small vessels; and the shore here, should not be approached under 8½ or 9 fathoms in a large ship.

St. Mary's Isles;

DERIAH BAHAUDER GHUR, in lat. 13° 20′ N. about 6½ leagues southward from Cundapore River, is the largest islet of the Range generally called St. Mary's Rocks or islets, which extends from lat. 13° 28′ to 13° 17′ N.; and the outermost islets of this range are 5 miles distant from the shore, having a channel with 3, 4, and 5 fathoms irregular soundings between them and the main, but safe only for boats. Some of them may be seen 3 or 3½ leagues from the deck; the others are low, nearly even with the water's edge. They are in one with Barsalore Peak bearing N. by E. ½ E., and some of them are long flat islets, particularly the southernmost.

and Molky Rocks.

THE PREMEIRA ROCKS, (called also Molky Rocks) are situated in lat. 13° 11′ N., 6 and 7 miles from the shore; these are a small group which may be seen 3 or 3½ leagues from the deck, having 12 fathoms close to them. The channel between them and the main, is thought to be safe for small vessels, but is seldom used.

The Molky Rocks, and St. Mary's Isles, ought not to be approached under 15 or 16 fathoms in a dark night, for in some places near them, the depths decrease suddenly under 14 or 15 fathoms, over a hard bottom; but in day-light, they may be approached much nearer, when the dangers are visible.

Molky River.

MOLKY RIVER, situated about 3½ leagues E. S. Eastward from the rocks of the same name, is a place of shelter for boats and small vessels, and may be known by a white fort or tower near it to the northward, and two small mounts a little inland, the one sloping and the other pyramidal, one in lat. 13° 19′ N., the pyramid in 13° 12′ N.

The coast and mountains from thence to

The distance from the Molky Rocks to Mangalore is 8 or 8½ leagues, about S. S. E. ½ E., and the coast between them is bold, and safe to approach to 8 fathoms. The chain of Bednore Mountains in this part, is very remarkable, by a deep gap, formed by a large mountain of abrupt aspect, rising nearly perpendicularly from it on the north side, which is in lat. 13° 9′ N. and has by some navigators been called Mount Hyder. To the southward of this place, the country becomes less elevated, and the hills over Mangalore are separated from each other by vallies.

Mangalore, Geo. site.

MANGALORE, in lat. 12° 50½′ N. lon. 75° 7′ E., by chronometers from Bombay, is situated near the mouth of a considerable river, navigable only by small vessels, there being but 10 or 11 feet on the bar. Rice is very plentiful here, sandal-wood may also be procured at times. The anchorage is soft mud, in 5, 6, or 7 fathoms at discretion, abreast the fort and river, with the flagstaff about E. by N., distance from the town 2 or 2½ miles. About 6 leagues to the N. E. of Mangalore, and 4 or 5 leagues from the sea, in lat. 13° 2′ N., a

rugged double peaked hill, rises nearly perpendicular from the low country, and has sometimes been called the Asses' Ears.

From Mangalore, the direction of the coast is S. S. E. ½ E. about 17 leagues to Mount Dilly; the land near the sea is generally low and woody, particularly to the southward of Barn Hill, which is a sloping mount, nearly level on the summit, situated a little inland, in lat. about 12° 40′ N., and 4 or 5 leagues distant from Mangalore. About 6 or 6½ leagues to the southward of this hill, and nearly equal distance from Mount Dilly, stands another Mount in lat. 12° 22′ N., some distance inland; this is called Mount Formosa, formed by several contiguous hills; there are other hills situated farther from the sea. In passing along this part of the coast, there is no danger, the depths decreasing regularly toward the shore to 7 or 8 fathoms about 2 miles off. A ship in working, may stand in to 7 or 8 fathoms soft ground, when the weather is fine. About 4 miles to the northward of Mount Dilly, is the entrance of Cavoy River, which takes a northerly course parallel to the coast, and very near the sea, forming several islands. The depths are 1½ and 2 fathoms in the entrance, and a little way up, is the fort and village.* The coast from thence to Mount Dilly.

The edge of the bank of soundings, abreast of Pigeon Island and Barsalore Peak, projects 18 or 20 leagues from the coast, but converges more toward it, as the distance is increased to the southward; for abreast of Mangalore and Mount Dilly, the edge of soundings from 100 to 150 fathoms, is about 15 leagues from the shore. Between Pigeon Island and Mount Dilly, the depths are generally 30 to 34 fathoms from 8 to 10 leagues off shore, 20 or 22 fathoms 5 leagues off, and 15 or 16 fathoms about 2 leagues off shore; but near the latter place, the coast becomes more steep, there being 20 and 22 fathoms about 2½ or 3 leagues from the land. Soundings.

## 3d. THE COAST OF MALABAR, WITH SAILING DIRECTIONS.

THIS COAST, is said to commence at a place called Declah, about 8 leagues to the southward of Mangalore, where there is a white wall in ruins, still visible from the offing; from whence, it extends to Cape Comorin. Malabar Coast.

MOUNT DILLY, OR DILLA, may however, be considered by navigators as the limit between the coasts of Canara and Malabar, being a conspicuous head land, that may be seen 8 or 9 leagues from the deck in clear weather. The contiguous coast being low and woody, is not seen far, which gives the mount the appearance of an high island, when viewed either from the northward or southward. Mount Dilly.

The outer extreme of this head land, terminates in a bluff point, having on it a small ancient fort of black aspect, situated in lat. 11° 59′ N. lon. 75° 31½′ E., or from Algoada Fort 1° 38½′ E., and from Cape Comorin 2° 12′ W. by chronometers. The shore here, is bold and safe to approach, there being 7 and 8 fathoms at 1 and 2 miles distance, 20 and 22 fathoms at 2 or 2½ leagues distance, and at 15 leagues distance abreast of the mount, you lose soundings. This is the narrowest part of the channel between the main and Laccadiva Islands, the distance being 27 leagues betwixt Elicalpeni Bank and Mount Dilly. Abreast of this headland, there is frequently a drain of current to the southward, and a short confused swell, the effects of brisk north-westers, which greatly prevail here. Geo. site.

BILLIAPATAM RIVER'S ENTRANCE, is about 6 miles to the eastward of Mount Dilly, the coast between them forming a bight, is low, covered with trees, safe to approach Billiapatam River.

* Cattle may be got here at a moderate price. In ancient charts it is called Ram-Dilly, but by the natives Cavoy.

to 5 or 6 fathoms, in regular soundings soft ground. This river extends a considerable way inland, and is a place of some trade, although navigable only by boats or small vessels, there being from 1 to 2 fathoms water at the entrance, abreast of which, ships may anchor in 3½, 4, or 5 fathoms, from 1 to 2 miles off shore.

Geo. site of Cananore,

CANANORE POINT AND FORT, in lat. 11° 51′ N. lon. 75° 41½′ E., about 2½ leagues S. Eastward from Billiapatam, has a small bay under it on the south side, where boats are sheltered from N. W. winds. The point is bluff, and easily known by the fort and other buildings, and by the land near it having a reddish appearance. Ships may anchor abreast of the fort in 5 fathoms; 4½ fathoms is very close to the point, and near a reef of rocks under water, which requires great caution, as the ships Zoroaster, and Jehangire, both belonging to Bombay, were wrecked upon this hidden danger, by borrowing too close to the shore.

and of Tellicherry.

TELLICHERRY FLAGSTAFF, in lat. 11° 44′ N.* lon. 75° 49½′ E. bears S. 50° E. from the fort on Mount Dilly 23 or 24 miles, and 3½ leagues to the S. E. of Cananore Point; the coast between them is safe to approach to 5 fathoms, but a large ship ought not to come under 6 fathoms in the night, for it is rocky under 4 fathoms from Tellicherry to Green Island. This is a small island covered with trees, situated close to Durmapatam Point, about 3 miles to the northward of the anchorage, where 2 small rivers fall into the sea, having 4 or 5 feet water at the entrance.

Anchorage.

The anchorage in the road is soft mud, in 5¼ or 5½ fathoms, with the flagstaff bearing N. E. by N. and Green Island N. N. W., off the town 1½ or 2 miles. Good water, and other refreshments may be procured here, and also at the ports mentioned above.

Aspect of the land.

The land about Tellicherry and Cananore, appears rather low and barren near the sea, but at a distance in the country, over the former place, the Ghauts are formed of high undulating mountains.

From Mount Dilly to Tellicherry, the soundings are regular, 20 or 22 fathoms about 4 leagues off, and from 30 to 34 fathoms 7 or 8 leagues off shore.

Mahe.

MAHE FORT, in lat. 11° 41′ N., is near the mouth of a small river, about 4 or 5 miles to the S. Eastward of Tellicherry; the land between them is rather low near the sea, with some hills, on one of which Moilan Fort is situated.

Ships anchor at Mahe in 5 or 6 fathoms soft ground, abreast the flagstaff bearing E. by N. or E. N. E., 1½ or 2 miles off shore.

Geo. site of Sacrifice Rock.

SACRIFICE ROCK, (called Cugnali Island by the natives) in lat. 11° 30′ N. lon. 75° 51′ E. bears S. ½ E. from Tellicherry near 5 leagues, and distant 2 leagues from the land opposite; it has a white aspect, discernible 3 or 3½ leagues from the deck of a large ship, being elevated 15 or 20 feet above water. This rock or island, is steep, all round, having 12 and 13 fathoms close to it, 16 fathoms about 1½ or 2 miles outside; 10 fathoms within it, to 7 fathoms about mid-way between it and the main, in a very good channel.

Channel between it and the main.

Cotta Point and Reef.

COTTA POINT, to the eastward of the rock, at the entrance of Cotta River, is low and covered with trees, having a flat or reef† of shoal water extending from it along shore

* It has generally been placed in 11° 48′ to 50′ N., but Lieut. Mac Cluer made it as above, by observations carefully taken. Within the ledge of Black Rocks fronting the fort, small vessels have been known to lie during the S. W. monsoon. Large ships touching here, or at other places on the coast, when there is a chance of unsettled weather, should anchor well out in 7 or 8 fathoms; for H. M. S. Superb, of 74 guns, was lost at Tellicherry, in November, 1781-2. The fleet having anchored in 5 and 5½ fathoms, a heavy sea began to roll in, which made that ship strike on the Sultan's anchor, she being moored inside of the Superb.

† The Prudence and Union, Ordnance store ships, were driven from Calicut Road in a storm, at the setting in

to the northward; ships passing through the inside channel, ought therefore, to give the point a good birth, by borrowing toward the rock; and in working should heave the lead quick, if they come under 6 fathoms standing in shore.

Passing outside of the Sacrifice Rock in the night, a ship ought not to come under 16 or 17 fathoms water.

CALICUT, in lat. 11° 15′ N. lon. 76° 5½′ E. from Bombay by chronometers, bears from Sacrifice Rock S. E., distant 6½ leagues, and may be known by several hills near the sea; one of them a little to the southward, resembles 2 paps. To the northward of the town, some tombs or small pyramids may be discerned. Geo. site of Calicut: the land around.

The mountains of the Ghauts approach nearer the sea, and seem higher here, than on any other part of the coast; directly inland from the town, about E. N. E., there is a knob or hummock on the summit of the mountain, called by some navigators the Camel's Hump, and another farther to the northward, somewhat similar.

The anchorage for a large ship is in 5 or 6 fathoms, with the flagstaff E. by N. ½ N., or the tombs from E. N. E. to E. N. E. ½ N., off shore from 2 to 3 miles. Small vessels may lie inside the rocky bank abreast the town, which has 3 fathoms on it, and 5 fathoms a little outside; large ships, ought, therefore, not to anchor under this depth, except first examining the bank.

A considerable trade is carried on in pepper, cardamons, timber, &c.; the country about this place, and Mahe, abounds in pepper.

The coast between Tellicherry and Calicut is mostly low, interspersed with hills at a small distance from the sea; inland, the Ghaut mountains are very high, ending in undulating declivities over the former place. The depths on this part of the coast, are 20 and 22 fathoms 4 and 5 leagues off, 30 and 32 fathoms about 8 leagues off shore. In passing round Cotta Point, and from thence nearly to Calicut, a large ship should not come under 6 fathoms.

BEYPORE RIVER, in lat. 11° 10′ N., bearing S. by E. from Calicut about 2 leagues distant, has 8 or 10 feet water on the bar at high tides, but the rise and fall is very little along the Malabar coast. This river takes its rise from the Ghauts, and runs through a country abounding with excellent teak timber for ship building. A little inland from this place, there is a hill called the Dolphin's Head. Baypore River.

About 3½ leagues farther to the southward, in lat. 10° 59′ N., is situated the small river of Tanore, and 3 or 3½ leagues distant from it to the S. S. E. there is said to be another river, navigable only by boats or small vessels, where in lat. 10° 51′ N. is situated the village Colay. and others.

Tanore, may be known by a tuft of trees; the coast is very woody between it and Paniany.

PANIANY, OR PANIANI RIVER, in lat. about 10° 38′ N. lon. 76° 17′ E., about 7 leagues S. S. E. from Tanore, is navigable only by small craft, the water being shoal; off this place there is a shoal with 4 fathoms on it, distant 3 or 4 miles from the shore, having 6 fathoms inside, and 9½ or 10 fathoms about a mile outside of it. Large ships may avoid it by passing in 10 fathoms, but the rest of the coast from Calicut to this place, and from hence to Cochin, may be approached to 6 or 7 fathoms. The whole of this space is low and woody fronting the sea, but inland the high ridge of mountains called the Ghauts, extends Palur River, and adjacent coast.

of the S. W. monsoon, and not being able to weather Cotta Point, were both wrecked on the reefs near it, on the 20th May, 1782. About 14 years afterward, the Herculus of Bombay, by borrowing too close in the night, grounded, and was nearly lost.

nearly parallel to the coast to Cape Comorin; excepting a remarkable *interruption* or *gap* of low land between Paniany and Cochin, through which, the land winds blow in general, stronger than on any other part of the coast.

Geo. site of Chitwa. CHITWA CHURCH, in lat. 10° 33′ N. lon. 76° 20′ E. is situated on the north side of the River Chitwa, or Palur, about 2 or 2½ leagues S. S. E. from Paniany River. Ships anchor off this place in 6 fathoms mud abreast the river, which is wide, but the water being shallow, it will admit only boats or small vessels.

Aycotta River, CRANGANORE, OR AYCOTTA RIVER, is 7 or 8 miles S. S. E. and S. S. E. ½ E. from Paniany River, having a bar at the entrance with 5 and 6 feet on it, and 14 or 16 feet inside. From the south point, a mud bank with 3 fathoms on it, projects out near 2 miles to seaward.

Coir, timber, and some pepper, are exported from those rivers situated between Calicut and Cochin.

and the coast to Cochin. From Cranganore, the coast stretches about S. by E. and S. by E. ½ E. 5½ or 6 leagues to Cochin; the general direction of it from Calicut to the latter place is S. S. E., but varies at different parts between S. by E. and S. E. by S. The depths are 20 and 22 fathoms

Soundings. from 5 to 6 leagues off shore, the low land then just visible from the deck; and 30 or 32 fathoms, is about 8 leagues from it. From lat. 10° 30′ N. to the parallel of Cochin, the edge of the bank has a steep declivity, from 36 or 40 fathoms to 100 fathoms no ground, about 9 or 9½ leagues off shore.

Geo. site of Cochin. COCHIN, in lat. 9° 57½′ N. lon. 76° 29′ E., situated on the south side the entrance of the most considerable river on this coast, is a place of consequence as a naval depot, the country abounding with excellent teak timber, fit for ship building, and coir for cordage. Several ships have been built here, for the merchants of Bombay, measuring from 600 to 1000 tons.

The bar is navigable by ships drawing 14 or 15 feet water, the channel over it is close to the northern shore, and to the breakers, by steering direct for the Portuguese church, situated on the north side of the river. The ebb upon the bar is very strong, and runs much longer than the flood; vessels therefore, do not attempt to run in, unless the wind is from the sea. On the springs, the rise of tide is seldom more than 6 feet.

There is at times, a surf on the bar, occasioned by the strong ebbs running over the shoal parts against the sea breezes; strangers, ought therefore, in running for the river in their boats, to be careful to keep in the proper channel between the reefs on each side, which project out about a mile, as accidents have happened, by persons unaccquainted crossing the bar late in the evening. The river inside is deep, and may be considered as an arm of the sea, for it extends to the southward parallel to the line of the coast, and very little distant from it, communicating with Iviker Inlet or River, which falls into the sea to the northward of Quilon, forming islands by the various inlets.

Although the town has a white appearance, it is not easily discerned from the offing, being almost hid by trees when approached from the southward, but the flagstaff is high above them, and easily perceived with a telescope.

Anchorage. The common anchorage is in 5½, 6, or 6½ fathoms, soft ground, with the flagstaff E. ½ N. to E. N. E., off shore 2 or 3 miles. Water, poultry, and other refreshments, may be procured here.

Geo. site of Alippee. ALIPPEE, in lat. 9° 30′ N. lon. 76° 34′ E., bearing S. by E. from Cochin, distant 9 leagues, may be known from the offing, in coming from the northward, by a large white house, which is hid by some cocoa-nut trees, when approached from the southward.

This village is situated in the Kingdom of Travancore, and carries on a considerable trade in teak timber, beetle-nut, coir and pepper.

A large ship may anchor in 5 or 5½ fathoms with the large white house N. E. by E.; or a ship not drawing more than 18 feet water, may anchor in 4, or ¼ less 4 fathoms, with the flagstaff bearing N. E. distant about 3½ or 4 miles.

The land has encroached considerably upon the sea here, during these last 20 years, and being fronted by a soft mud bank, a vessel might ride with less risk, than at any other part of the coast.

Between Cochin and this place,* the coast is very low, covered with trees, and may be approached to 5 or 6 fathoms in a large ship, the bank being very even to 5 fathoms, about 1 or 1½ mile from the shore.

PORCA, in lat. 9° 20′ N. bearing about S. S. E. 3½ leagues from Alippee, is another village belonging to the Rajah of Travancore, of considerable extent, but the houses are not easily seen except when near the shore. Coir, plank, or timber for ship building, and pepper, are exported from these places, and from some of the adjacent ports. The coast continues low and even, safe to approach to 5 or 6 fathoms. The anchorage is abreast the village, in 5½ or 6 fathoms, 1½ or 2 miles from it. Porca.

Between Alippee and Porca, a village named Crahul is situated, with cajan store-houses close to the water's edge, which carries on some trade.

CARUNAPALE, lies to the northward of Iviker River, and when running along the coast in 8 fathoms, it may be easily distinguished by a considerable opening like the mouth of a river. Carunapale.

IVIKER, YIVIKER, IVICA, OR AYBICKA, is a village on a river of the same name, belonging to the Rajah of Travancore, situated a little to the N. W. of Quilon; it has a wide entrance in lat. 8° 54′ N. communicating with several other rivers, one of which extends parallel to the coast, and unites with Cochin River, forming a safe inland navigation. Iviker.

This place admits only boats over the bar at the entrance, there being but 5 or 6 feet on it at high water, and the bottom consists of hard sand and gravel, as far out as 8 fathoms.

A large ship touching here to take in plank, or other articles, may anchor in 7 fathoms, with Quilon Point bearing S. E. by E., and the middle of Iviker River's mouth N. E. by E.; or in 6 fathoms hard sand, with the River's mouth N. E. ½ E., and Quilon Flagstaff E. S. E. ½ S., off shore about 3 miles. It would not be prudent to go farther in with a large ship, and the soundings are very irregular under 8 fathoms, particularly to the northward of this anchorage.

QUILON, OR QUILOAN POINT AND FORT, in lat. 8° 52′ N. lon. 76° 48½′ E. or 55 miles west from Cape Comorin by chronometer, bears S. S. E. about 10½ leagues from Porca; the coast between them is low, covered with trees, and may be approached to 5½ or 6 fathoms, till near the entrance of Iviker River. Geo. site of Quilon, and reef.

QUILON REEF, OR BANK OF HARD GROUND, extends from Iviker round Quilon Point, where it becomes very uneven, and dangerous to approach under 12 or 13 fathoms; for under these depths, abreast of the point, there are sudden overfalls from 9, to 4, 3, and 2½ fathoms rocky bottom.

* The Earl Camden in 5½ fathoms, with a village bearing E. N. E. ½ E. when at anchor, made it in lat. 9° 42′ N. by observation, which must lie considerably to the north of Alippee, if this observation was correct.

The reef or foul ground of Quilon, should not be approached under 12 fathoms, for the ships Concord, and Britannia of Bombay, grounded in the night, by borrowing too close. The rocks penetrated through the bottom of the latter ship, but she was saved by the chunam or plaister work amongst her floors, which floated her to Bombay.

Quilon is a projecting part of the coast, and the point a little higher than the other land; when far out in the offing in 29 or 30 fathoms, it may be known by a *bushy tree* or *tuft*, more elevated than the others. To the southward of the reef and point, the coast forms a bight, where ships may anchor about 2½ or 3 miles from the fort, and be sheltered from N. W. winds by the reef.

Geo. site of Anjenga.

ANJENGA FORT, in lat. 8° 39½′ N. lon. 77° 00′ E., bears from Quilon S. 44° E., distant 6 leagues; when 3 miles to the southward of the latter, the coast may be approached to 9 or 10 fathoms, which will be 1½ or 2 miles from the shore. There are some cliffs of a reddish appearance about 4 miles to the northward of Anjenga, which may denote the approach to it, in coming from that direction; for the fort and houses being low, and the coast also low and woody, this place is not easily distinguished from a considerable distance in the offing. In clear weather, it may be known by a remarkable peak of the Ghauts about 8 leagues inland, higher than the adjoining mountains, which is in one with the fort bearing E. 4½° S., and called sometimes Anjenga Peak. This peak may be seen from abreast of Quilon, and until to the southward of Cape Comorin.

Anchorage.

Under 10 fathoms in Anjenga Road, the bottom is sand, and in some parts rocky to the southward of the fort; ships ought, therefore, not to anchor under 10 or 11 fathoms, the ground being good in these depths. A convenient birth is with the flagstaff E. N. E. ½ N., Brinjal Hill, E. S. E. ¾ S., and the extremes of the land from N. N. W. ¾ W. to S. E. ¼ S., in 11 or 12 fathoms mud, off shore 1½ or 2 miles. Coir may be procured here, but the water is indifferent and scarce, and few articles of refreshment are to be obtained. The company's ships load pepper here, and at Quilon, also at Calicut, Tellicherry, and Mahe, which is brought in tonies or country boats, adapted for passing through the surf. There is said to be fresh water at the red cliffs to the northward of Anjenga, but it cannot be got conveniently; a considerable surf generally prevailing on the coast, particularly to the southward, renders it frequently unsafe for ship's boats to land.

Soundings.

The depths of water between Cochin and Anjenga, are 20 and 22 fathoms from 2 to 3 leagues off, 30 to 34 fathoms about 5 and 5½ leagues off; and the edge of the bank of soundings, is distant 9 or 10 leagues from the shore.

Geo. site of Ruttera Point, land around.

RUTTERA POINT, in lat. 8° 23′ N. lon. 77° 8′ E., or 36 miles west from Cape Comorin by chronometers, bears S. S. E. ½ E. from Anjenga, distant 6 leagues; it is a piece of low level land, terminating in a bluff, fronting the sea, higher than the contiguous coast, but projects very little. About 3½ miles to the northward of the point, there is a village called Pondera, recently established by the Travancore Rajah, having a high flagstaff with several straggling buildings between it and Anjenga. The coast in this space is low, abounding with trees, bold to approach, having 12 or 13 fathoms at 1½ and 2 miles distance, 25 or 26 fathoms about 2 and 2½ leagues distance; and the edge of the bank of soundings is about 9 leagues distant from the shore. Inland, the Ghaut mountains are very high, and between them and the coast some small hills appear, the most remarkable of which is a regular sloping round mount, in lat. about 8° 28½′ N., a little to the N. Eastward of Ruttera Point, called Brinjall Hill, from its appearance in some views. This hill being but 2, or 2½ leagues from the sea, is visible at a considerable distance from the southward, and is also seen from Anjenga Road.

General direction of the coast, &c.

A line drawn from the Island Kanary S. 21½° E. or S. 22° E., would pass through Ruttera Point; but the coast has between them several projecting headlands and convexities to

seaward, particularly at Geriah, Carwar, Mount Dilly, and Quilon, whereby a considerable change is produced in the contour of the shore. It may, however, be observed as a *general rule*, that a ship being abreast of Kanary at 8 leagues distance, a course steered S. by E. will place her about the same distance from the land at Geriah, and from thence a course made good S. S. E. ¼ E., will carry her about the same distance from Ruttera Point. Abreast of this point, the depths are 24 and 25 fathoms at 4 or 5 miles distance, and within 1½ or 2 miles of it, there is 12 or 14 fathoms. the course to be followed.

POINT VENIAM, about 2½ leagues S. E. from Ruttera Point, is formed of steep bold land, or reddish cliffs, considerably elevated, having on the north side a small river, and a village at the northern extremity of the high land that forms the point; the coast between Ruttera Point and it, is low and woody as far as the village, and forms a small concavity. The land close to the eastward of Point Veniam has a red aspect, intermixed with white patches in some places, and this high reddish land, steep toward the sea, extends from the point along the coast a few miles to the E. S. Eastward. Point Veniam and the contiguous coast.

From Point Veniam, the coast takes a direction about S. E. by E. to Cadiapatam Point, 5½ or 6 leagues; the land facing the sea is mostly steep and high, of a red appearance in some places. About half way between them, the Island Enciam, having a church and some other buildings on it, is situated near the shore, and rocks above and under water project from it to a small distance. To the northward of these, lie the town and river of Tengaypatnam; this river having a bar at the mouth, can only be entered by large boats in the rainy season, although navigable inside at all times, and extends a considerable way inland. There are several small villages and churches along this part of the coast, and some of these *ancient* Nestorian churches, may be seen interspersed along the shore from hence to Cape Comorin. A little to the eastward of the Island Enciam, the steep land near the sea has a red aspect, resembling that about Point Veniam, between which and Cadiapatam Point, is situated the Village Coleche, where the coast forms a small bay, or concavity. And from thence to Cadiapatam Point.

CADIAPATAM POINT, in lat. 8° 9′ N. lon. 77° 29′ E., is steep and high, of reddish appearance, with a few trees near its extremity. To the S. Westward of this point, there are 2 Rocky Islets about a mile from each other, and distant 2 or 2½ miles from the point, surrounded by rocks under water, and foul ground. About 1 or 1½ mile S. ¾ E. from the westernmost of these islets, and 3½ or 4 miles from the point, lies the outermost rock, which has been called the Buoy Rock, from a small part of it appearing above water, but the sea does not appear to break on it at all times,* nor does it seem to be visible at high water; the CROCODILE ROCK, would therefore, be a more appropriate name for this danger. Geo. site. Cadiapatam Rocks, and the Crocodile Rock.

From this rock, the extreme low point of Cape Comorin, (according to Mr. Nichelson) bears E. or E. ¼ S. distant 5 leagues, the outermost high land over the cape E. by N. ¼ N. Cadiapatam Point N. N. E. ½ E. the westernmost small islet N. ¾ W., and the northern extreme of the land N. W. ½ N. Close to it, there are 13 and 14 fathoms, 17 fathoms about ¼ of a mile outside, 19 fathoms about ½ a mile, 22 fathoms about 1 mile, and 23 fathoms about 2 miles outside of it, sandy bottom.

The Dublin, on November 20th, 1791, was at sun-set in 22 fathoms, Cape Comorin bearing E. ¾ N., Cadiapatam Point N. ½ W., the Crocodile Rock N. W. ½ N., off the point 3 leagues, and off the Rock a short half mile. This Rock lies near 2 leagues from the shore,

* Rounding Point Cadiapatam at 2 or 3 leagues distance, in soundings from 24 to 26 fathoms, when the water was very smooth, no breakers were discernible on that rock. We passed it in 23 and 24 fathoms in a clear night, at another time, but it could not be perceived.

the central part of it just visible above water, and breaks about 2 ships lengths N. E. and S. W.; it bears S. W. from a rock or islet that lies about half a mile off shore; there are two of these rocks with several breakers about them, bearing about N. W. by N. and S. E. by S. 1½ mile from each other, neither of them more than half a mile off shore.* The sea broke no where but on the 2 rocks in shore, and on the Crocodile Rock, and there seems to be a good passage between the latter and the main.

H. M. S. Suffolk, 10th February, 1800, at 6 A. M. had Ruttera Point on with Anjenga Peak bearing N. 55° E. At 11½ A. M. Cape Comorin bore N. 84° E., the breakers on the Crocodile Rock N. 40° E. in one with a white house a little to the southward of a piece of red land called West Cape. The Crocodile Rock breakers, when on with the northernmost White Rock, bore N. 9° W. and these breakers seemed to be 3 miles distant from the shore.

Capt. W. Richardson, on the 23d Feb. 1809, passed within a ¼ mile, outside of the Crocodile Rock, in the Agnus, and observes, that when the tide is high and the water smooth, the sea *only at times* shews a small breaker upon the rock.

Capt. Edgcumbe, of the Royal Navy, describes this *danger* as follows, having passed inside of all these rocks, in 1809.

There are 2 small rocks off Cadiapatam Point, the easternmost of which bears from that point S. W. by W., distant about 2 miles, and they lie from each other E. S. E. and W. N. W. about 1½ mile distant, having several straggling rocks under water around, not more than a stones throw from them. We passed in H. M. S. Psyche, between Cadiapatam Point and these rocks, least water 10 fathoms abreast of the easternmost rocks, and when abreast of the westernmost rocks the least water was 6½ fathoms, having borrowed most toward the rocks in passing.

Outside of these rocks, lies a small *Sunken* Rock under water, which I am almost certain is that called the *Buoy* Rock in the Directory and Charts, described as appearing like a buoy above water, which it really does not, and I could only see the bare top of it from the mast-head, when the swell left it after breaking. This Sunken Rock bears from the easternmost of the above mentioned Cadiapatam Rocks S. W. by S. distant 2 miles, and from the westernmost S. by E.

Soundings. From Ruttera Point to Cadiapatam Point, the bank of soundings extends about 9 or 10 leagues from the land, 30 fathoms is from 4 to 5 leagues off, 25 or 26 fathoms is 2½ and 3 leagues from the shore, which should not be approached under these depths about Cadiapatam Point during the night or in dark weather, on account of the straggling rocks off that place: to the westward of these rocks, the coast is not so dangerous. In passing between them and Ruttera Point, from 22 to 26 fathoms is a good track with the land wind; or the land may be approached to 18 and 20 fathoms occasionally, more particularly between Enciam Island and Ruttera Point, a ship may borrow into 16 or 17 fathoms.

From Cadiapatam Point, the low sandy extremity of Cape Comorin bears E. by S. or E. by S. ¼ S., distant about 6 leagues; the coast between them having a little concavity in some places, is low and sandy close to the sea, rising in a gentle acclivity to the base of the mountains situated a few miles inland. Close to the shore some churches are seen, and about 5 miles to the westward of the cape lies the small river Manacoudy, with rocks barring its entrance, and some buildings near it: between this place and the grove of trees at the village of Cape Comorin, the low country seems divided by a wall or trench, stretching from the shore to the mountains, and fortified by mounds of earth.

Coast from Cadiapatam Point to Cape Comorin.

The land between the Ghauts and the shore, from Point Veniam to Cadiapatam Point, may be seen 7 leagues; and the mountains inland, 18 or 20 leagues in clear weather.

In passing along this part of the coast, when clear of the rocks off Cadiapatam Point,

* These Rocks seem to lie farther off shore, than stated here, from the Dublin's journal, as the Psyche frigate passed between them and the main.

the shore may be approached to 22 or 20 fathoms toward Cape Comorin, which will be about 3 miles off; but in the night or in hazy weather, it ought not to be approached so close.

CAPE COMORIN, the southern extremity of the Peninsula of Hindoostan, I made in lat. 8° 05′ N. lon. 77° 44′ E.* or 2° 36′ W. from Point de Galle by chronometers; it is formed of a circular low sandy point, not discernible above 3½ or 4 leagues from the deck of a large ship. Within 2 or 3 cables' lengths of the S. E. part of the point, lies a sloping rocky islet high above water, with other rocks about it, on which the sea breaks: to the westward of this islet, the shore of the cape is sandy and barren, but to the eastward it abounds with trees, having a fort and village among them close to the sea; the former 3 miles, and the village about 6 miles to the eastward of the islet. A little westward from the islet, on the extreme sandy pitch of the cape, stands a low white square building near the water's edge, with another larger building and some small forts beyond it at a small distance: from these, a large town or village extends to the eastward, in front of a plantation of tall trees on the upper part of the low land. This piece of land seems well inhabited, and extends from the western sandy part of the cape along the shore to the eastward, rising from the sea with a gentle acclivity to the base of the nearest mountains of the Ghauts, which is about 1 or 1½ mile from the shore. Close behind the plantation of trees, these mountains rise up in majestic sharp peaks, chained together, and forming a ridge, which is in one with the cape bearing N. N. E.; after extending some distance in that direction, this ridge or chain inclines to the westward of north, and stretching nearly parallel to the coast forms the interior boundary of the Province of Malabar, and joins to the chain of Bednore Mountains in the Province of Canara. In sailing along the coast, the Ghaut Mountains are always seen in clear weather, excepting where there is a *gap* or *chasm* in them; the southern part of the chain being near the sea, may be discerned when 18 leagues distant from the coast; and the outermost peaked mountain, which in some views appears isolated, is generally set for Cape Comorin by ships passing at too great a distance to discern the low land of the cape. A little detached from the end of the chain over the cape, on the east side, there is a sharp conical mountain by itself, like a sugar loaf, and 4½ leagues farther eastward, a sloping mount in the low country, a little inland. Geo. site of circumjacent coast, and the Ghaut mountains.

The low land that forms Cape Comorin, seems bold and safe to approach within 1½ or 2 miles. In crossing from Caliture in the Anna, 26th and 27th March, 1801, we had a brisk gale at S. W. and W. S. W., with a leeward current, with which we made the Coast of Madura 13 leagues to the eastward of the cape, at the high building or church on Manapar Point, situated in lat. 8° 22′ N. From hence, with a fresh westerly wind, we reached the cape in 30 hours, there being no current near the land. The soundings were found very regular, generally mud, with sand and shells at times; the depths from 9 to 11 fathoms 3 and 4 miles from the shore, and 20 fathoms about 3½ to 4 leagues off, when far to the eastward of the cape. When it was approached, the coast became more steep, for we tacked in 13 fathoms with the extreme point of the cape bearing W. ¼ S. distant 3 miles, and off the shore abreast 1½ mile; and when the building near the sea on the pitch of the cape bore N. ½ E. Soundings to the eastward, near Cape Comorin;

* The latitude was obtained from the sun's meridian altitude, observed at noon with the Cape bearing west, and agrees with the observations of several navigators and with the trigonometrical survey made on shore. The lon. stated above, also corresponds with the chronometric admeasurement from Bombay by several persons: but as Capt. Basil Hall, of the Royal Navy, an excellent observer, places Cape Comorin in lon. 77° 38′ E. by lunar observations, I think it necessary to state, that the above lon. of the Cape, rests on Madras being in lon. 80° 22′ E., (which appears to be more correctly settled than any place in India) and Point de Galle flagstaff 2 miles west of Madras flagstaff, measured by myself and other persons by chronometers. Capt. Hall measured by chronometers from Bombay flagstaff 4° 46¾′ E. to Cape Comorin, agreeing with my chronometric observations, but he made the former place 7 minutes more westerly than the lon. I have assigned to it by eclipses of Jupiter's Satellites.

distant 2 miles, tacked in 18½ fathoms, the depths being greater toward the shore on the S. and S. W. sides of this headland, than they are to the eastward.

From 18½ fathoms abreast the cape, at 2 miles distance, the depth increases only to 20 fathoms in a run of 5 miles off shore; to the eastward, the bank appears flat, with very regular soundings under 16 fathoms. The shore is low and woody to 11 leagues eastward of the cape, forming a bay with the appearance of a river in lat. 8° 13′ N. and the point on the south side of this bay is that called the East Cape by M. de Apre's. From this coast, the bank of soundings extends a great way out, the depths are 31 and 32 fathoms with the cape bearing N. N. W. 5 leagues. With the land over it bearing from N. N. W. to N. E. by E. in lat. 7° 49′ N. there are 42 and 45 fathoms, about 8 leagues off shore. The extremes N. N. E. to N. E. by E. off the cape 8 or 9 leagues, 56 fathoms; from N. to N. E. by E., off it 8 leagues, 38 fathoms; and directly south from it 9 leagues, 48 to 50 fathoms. In lat. 8° 5′ N. about 9 leagues due west from the cape, and 5 or 6 leagues off shore, the depths are 32 to 35 fathoms; and 15 or 16 leagues west from it, there are 63 and 65 fathoms on the edge of the bank, about 9 leagues from the nearest land.

and on the bank extending around.

A great way out from the cape, there is a bank abounding with cod, where some ships have caught considerable numbers of those fish, but it appears to be of small extent, and little known. In lat. 7° 28′ N. with the mountains over the cape bearing from N. by E. to N. by W. distant 12 or 13 leagues, we had soundings 46 fathoms; and in lat. 7° 47′ N. the land bearing from N. to N. E. ½ E. distant 9 or 10 leagues, there are 37 and 38 fathoms; probably one of these positions, may be on the cod bank.

A cod bank.

The rock placed in 35 fathoms even with the waters edge, in lat. 7° 48′ N., and bearing from Cape Comorin about S. W. 6 or 7 leagues, according to the description given by Mr. Nichelson, is now well known to have no existence; nor does there appear to be any dangers around the cape, to the eastward of the rocks and islets situated near Cadiapatam Point.

Nichelson's rock has no existence.

There seems to be very little variation of the compass in the vicinity of Cape Comorin at present, or near any of the coasts which form the peninsula of Hindoostan, although Capt. Basil Hall, in March 1815, made the variation 2° 9′ E. in lat. 6½° N. lon. 79° E. a little to the westward of Ceylon.

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# *LACCADIVA, or LACCADIVE ISLANDS.*

## CHANNELS AND DANGERS, WITH SAILING DIRECTIONS.

General description of the Laccadiva Islands.

THE ARCHIPELAGO of low islands opposite to the Coast of Malabar, known by the general name of Laccadivas, or Laccadives, extends from lat. 10° N. to about 12° N., having the Nine Degree's Channel to the southward between them and the Island Minicoy, and an extensive channel to the eastward, separating them from the coast. Most of these islands are surrounded by extensive coral reefs steep to, there are also some detached reefs amongst, or near them; and being generally very low, the trees just visible above water, they are therefore commonly avoided by navigators; hence, the true limits of this Archipelago seem not yet *correctly* determined, particularly to the northward and N. West, which are considered most dangerous, although Lieuts. M'Cluer, and Wedgebrough, of the Bombay Marine, surveyed great part of these islands, and found safe and wide channels among them.

Cherbaniani Bank.

CHERBANIANI BANK, or Reef, *appears* to be the north-westernmost danger of the

Laccadiva Archipelago; its extent is not yet ascertained, although the position of the western extremity of this dangerous Bank, may be approximated near the truth.

Captain Chalmers, after passing Betra-Par on the west side, with a gentle breeze and smooth sea, steered N. N. W. and N. W. by N. 18 hours, until the breakers on Cherbaniani Bank were seen bearing from N. by E. ½ E. to N. by W. ½ W. He then steered to the N. West with a fair wind, keeping along the edge of the Bank at 5 or 6 miles distance. In many places high rocks were discerned, which bore the marks of being covered by the sea in spring tides, or during the S. W. monsoon: although the sea was smooth, the breakers ran very high on the Bank.

By noon observation, he made the body of the breakers on the western edge of the Bank, in lat. 12° 22′ N. and 24 miles west from the small island Betra-Par, or in lon. 72° 10′ E., which may be considered nearly correct, for it is not probable, that his reckoning could be liable to much error during so short a run, when no current was experienced. Geo. site approximated.

The Richmond struck on the west side of this bank in the night of the 25th March 1736, and backed off without damage; in the morning, detached rocks and breakers were observed to extend north and south about 4 or 5 leagues, and appeared to be about a league in breadth. She made this danger in lat. 12° 21′ N. and there appeared a sand bank on its northern extremity. There seem to be other dangers to the northward of this, as will be perceived by the following extracts.

Susannah, from Mocha bound to Calicut, 8th Sept. 1719, at ½ past 1 P. M. saw breakers bearing south, with 3 patches of sand distant about 3 miles; and at 3 P. M. saw several rocks to the east of them, with 2 hummocks of sand to the eastward of the rocks, being about 1 league or more in extent from the sand first seen in a S. E. direction; but from the mast-head, we could see the breakers as far as S. S. E. and South. This sand is called BASSAS DE PEDRA, or Padra, which by noon observation I make in lat. 12° 40′ N. Susannahs account of the northernmost shoals.

This has been considered the northernmost of these dangers, but the ship Mamoody on the 31st March 1750, got into soundings in lat. 13° 52′ N. and 3° 17′ West from Mount Dilly by account. She anchored in 27 fathoms white sand, and after weighing, made several tacks in various depths, from 20 fathoms fine white sand to 90 fathoms no ground. At noon, lat. observed 14° 4′ N. then 3° 15′ West from Mount Dilly, when breakers bore from N. W. to N. N. W. distant 1½ mile, tacked in 23 fathoms coarse sand, and stood to N. E.ward, deepening gradually to 26 fathoms, then at once 45 fathoms, and the next cast no ground. Mamoody's account.

This danger is called by the Mamoody, BASSAS DE PEDRO, which is situated in lat. 14° 4′ N., if the noon observation was correct, which seems rather doubtful, for several ships have crossed near the situation assigned to the Bassas de Padra, or Pedro, (corrupted into Padua by late authors) and I have twice, myself, passed over their assigned place, without discovering any appearance of danger.

A good look out, however, is certainly proper when in the proximity of this supposed danger; and it is much to be regretted, that these ***northern dangers only***, have been left unexplored, whilst the islands of the Laccadivas were carefully surveyed by Lieuts. M'Cluer and Wedgebrough of the Bombay Marine.*

BETRA-PAR, is a very small island, or sand bank, with some trees on the northern part, situated on the N. E. extremity of an extensive coral reef, which stretches to the west- Betra-Par;

* The Laccadiva Islands, most probably, have originated from the coral reefs which form their base, for most of them are small elevations above water, situated on the eastern edges of the great coral shoals which project several miles to the westward of these low islands. It therefore, appears, that the violence of the westerly monsoon has broken pieces of coral from the western edges of those shoals, and drifted them over until they became even with the surface of the sea at the eastern parts, an accumulation of drift weed and other marine substances being then intercepted, low islands would gradually appear. A corroboration that they have been formed in this manner, is the thin stratum of earth formed of decayed vegetables, &c., composing the surface of most of those islands, which has under it a white loose sand, resembling that on the beach.

ward about 4 miles, and then to the southward in a semi-circular form; after reaching lat. 11° 29′ N., it turns round to the N. E., and stretches due north till its eastern verge joins to the island. At the S. E. part of the reef there is a small islet, and several rocks appear above water, on which the sea breaks very high. Close under the south side of the principal island, there is a gap in the reef with 2 fathoms water, where in fine weather, a small vessel or boat might lie for a short time. The Grantham, on the 8th of October 1713, at 5 A. M. ran on the west part of this reef, and after throwing part of her cargo overboard, fortunately hove off by a kedge anchor laid out in deep water, the reef being very steep. Betra-Par was seen by the Hope, which ship made it in lat. 11° 35′ N. Captain Chalmers, passed to the westward of it in the ship St. George, 7th November, 1791, and made it by noon observation in lat. 11° 34′ N., then in sight from the deck, and the breakers on the reef bearing from N. N. E. to E. by N. Lieutenant Wedgebrough in his survey of these islands, in 1795, sailed close round the reef, and made the island in lat. 11° 35½′ N. lon. 72° 34′ E. or 1° 26′ W. from Underoot, by chronometer, which must be very near its true position. This appears to be the N. Westernmost of the Laccadiva Islands, and bears from Chittae, about W. by S., distant 10 leagues.

Geo. site.

Geo. site of Peremul-Par and Reef.

PEREMUL-PAR, in lat. 11° 9′ N. lon. 72° 28½′ E. by chronometer, is a very small low island, situated on the S. E. end of a great coral reef, which stretches to the northward 5 miles, and about 6 miles to the N. Westward of the island. This reef is of a triangular form, with soundings close to it on the S. W. side, and round the N. W. point or angle. Its N. E. extremity is in lat. 11° 14′ N., the south end in 11° 7′ N.; between which and Bingaro, there is a safe channel 3 leagues wide.

Bingaro and Tingaro, and the adjacent banks.

BINGARO, in lat. 10° 55′ N., is a small island, about 2 leagues N. E. by E. from the north end of Aucutta. TINGARO, is another small island about 2 miles E. N. E. from the former, and these 2 small islands are encircled by a coral reef, which projects from 1½ to 2 miles W. and N. Westward from Bingaro, but very little to the eastward of Tingaro, where it is steep to.

From the N. E. end of Aucutta, to the western extremity of the reef surrounding these small islands, there is a bank of coral, with soundings on it from 5 or 6, to 9 or 10 fathoms, where a vessel might anchor in an exigent case. About 6 or 7 miles eastward from Tingaro, is situated the western limit of the large bank of soundings, extending to the northward of Pittie.

Aucutta Island and reef; geo. site.

AUCUTTA ISLAND, extends N. N. E. and S. S. W. 3 or 3½ miles, the breadth about ½ a mile. It is well inhabited, planted with cocoa-nut trees, and seems a little higher than the small islands in its vicinity. The centre of Aucutta is in lat. 10° 51½′ N. lon. 72° 31′ E. by chronometer. At the distance of a mile from its south point, and joined to it by a reef, is the small island Calpooty, with soundings near it on the south side; and from this island, a coral reef projects to the W. and N. W., in the form of a semi-circle, distant above 2 miles from the west side of Aucutta, and joins to the bank at its north end. On the edge of the reef, directly west from the northern extremity of the island, there are soundings where a vessel might anchor in case of necessity, but the bottom is coral rock. The channel between these islands and Seuheli-Par Reefs, seems to be 12 or 13 leagues wide.

Geo. site of Chittae Island.

CHITTAE, in lat. 11° 42′ N. lon. 73° 4′ E., by chronometer, bearing N. W. by W. from Kittan, about 8 leagues, appears to be about 1½ or 2 miles in extent N. W. and S. E., with a coral reef stretching around its western side, distant 1 or 1½ mile from the island, and joining to each extremity. This is the N. Easternmost of the Laccadiva Islands, called by M. de Apre's, Metelar.

Between all these islands, the channels appear to be safe, but are seldom frequented to the northward of Seuheli-Par and Kalpeni.

KITTAN, in lat. 11° 29′ N. lon. 73° 24′ E., bearing S. E. by E. from Chittae about 8 leagues, extends N. N. W. and opposite, about 2½ miles, having a circular reef encompassing it on the west side, at the distance of 1½ or 2 miles, which joins to each end of the island; and a bank projects from its S. E. end to a considerable distance. Geo. site of Kittan.

CARDAMUM, the centre, in lat. 11° 14′ N. lon. 73° 12½′ E. by chronometer, bearing about S. W. by S. from Kittan about 6 leagues, is in length 4 miles, extending N. by E. and S. by W., but scarcely 1 mile in breadth. On the west side, it is defended by a circular coral reef, which stretches out near 2 miles, and embraces both ends of the island; near the south point of this reef, there are soundings 16 and 20 fathoms about half-way between this island and Ameni, from which it bears N. N. E. ½ E. distant 2 leagues. Geo. site of Cardamum.

AMENI, in lat. 11° 6½′ N. lon. 73° 8′ E. by chronometer, bearing nearly N. E. from Pittie, is of circular form, about 1½ mile in diameter, and surrounded by rocks to a small distance; close to these, on the west side, there are soundings, but between this island and the N. E. extremity of the bank extending from Pittie, there appears to be a space of 6 or 7 miles with very deep water. Geo. site of Ameni.

PITTIE, in lat. 10° 48′ N. lon. 72° 51′ E. by chronometer from Underoot, is a sand bank about 6 feet above the sea, without any shrubs or verdure, bearing from Courutee N. N. W. ½ W. 15 or 16 miles. It is covered with birds innumerable, and on the east side of the bank there is a black rock resembling a wreck. This sandy island or bank, seems to present an area of not more than 2 acres, and is probably, in part, inundated during the S. W. monsoon. Geo. site of Pittie.

From Pittie, an extensive rocky bank of soundings projects 3 or 4 leagues to the N. Westward toward Tingaro, and about 5 leagues N. Eastward towards Ameni; from thence, it stretches southward on the meridian of Courutee, within 9 or 10 miles of this island, and about the same distance from Pittie to the E. S. Eastward. The soundings on this bank (so far as it has been examined by Lieutenants Mc. Cluer and Wedgebrough) are from 7 or 8, to 20 and 24 fathoms, the smallest depths near Pittie. Bank of soundings.

COURUTEE ISLAND, in lat. 10° 34′ N. lon. 73° 0′ E. or 1° West from Underoot by chronometer, is about 2½ miles in length nearly N. E. and S. W. and 1 mile in breadth; although not large, it is valuable to the natives, by affording good water, and two species of excellent cocoa-nuts. A steep coral reef encompasses the south and west sides of this island, projecting out more than a mile in some parts; the east side, is also steep and rocky; the proper entrance is at the N. E. end of the island, but the boats of the natives pass through other parts of the reef. On the extremity of the reef, at the S. W. end of the island, there is a coral spot where a vessel might anchor in case of necessity, with a chain fixed to a small anchor. The tides or currents, run here at times 2 miles an hour, they never set *direct* upon any of the islands, but generally *along* them, or along the edges of the reefs, lessening the danger to be apprehended in calms. This island bears N. E. about 10 leagues from the northern Seuheli-Par; the channel between them, *appears* safe, and clear of danger. Geo. site of Courutee.

SEUHELI-PAR, OR SEUVELLI ISLANDS, are 2 in number, very small and low, each about 1¼ mile in circumference, and bearing about N. N. E. ¼ E. and opposite, from each other, distant 7 or 8 miles. The southern island is in lat. 10° 0′ N. lon. 72° 36′ E. Geo. site of Seuheli-Par Islands.

bearing nearly West from Kalpeni about 26 leagues, and the direct track between them appears to be clear of dangers. The northern island, has a coral spit with soundings from 4 or 5, to 10 or 12 fathoms on it, which projects out about a mile to the northward of the island, and where the only passage appears to be in the reef, through which boats can proceed to the southern island. They are not inhabited, except when boats come here from the other islands in the fair season to fish. The water procured by digging, is salt and unfit to use; a kind of soft wood for fuel, may be got on the northernmost island, but the other abounds most with cocoa-nuts, although of a saline quality and very unpalatable.

Dangers around.

A reef surrounds the northern island, one edge of which stretches to the southward, the other edge of it to the S. Westward, enveloping the southern island, and extending about 5½ or 6 miles to the S. W. of it, the southern extremity of this great reef being in lat. about 9° 54′ N.

It ought never to be approached but with great caution, by ships passing these islands, for there are no soundings near it; many of the black rocks on this reef, are considerably elevated above water. The currents are strong here, particularly at the full and change of moon, when the rise and fall of tide is 6 feet, and the time of high water a little before noon, though not regular.

These islands, should be approached with great circumspection in coming from the westward, for exclusive of the great reef surrounding them, there appears to be another detached from it; or the Great Reef must extend farther to the westward than projected on any charts, according to the following account given by the officers of the ship Anne.

April 19th, 1804. "At 11 P. M. the ship Anne, from the Red Sea, struck on a reef, and bilged before day light. From the wreck, the northernmost Seuheli-Par Island bore E. S. E. 4 or 5 leagues, and the southernmost island S. E. about 6 leagues; the reef from S. W. to E. N. E., being 10 or 12 miles in extent."

The distance estimated from the wreck to the islands is certainly too great, for they could not be discerned so far; Notwithstanding, if the bearings are *nearly* right, the reef on which this ship was wrecked, is farther from these islands than placed on the charts. These two islands, and the reef environing them, form the south-western limit of the Laccadivas.

Geo. site of Elicapeni Bank.

ELICALPENI BANK, about 5 miles in diameter, of circular form, bears N. E. ½ N. from Underoot Island, distant 10 or 11 leagues, and from Mount Dilly 27 leagues. The centre is in lat. 11° 15′ and 11° 16′ N. lon. 74° 20′ E. or 1° 30′ W. from Tellicherry by chronometers; this bank is composed of sharp coral rocks all over, the least water found on it by Lieutenant Mc. Cluer, during an examination of 2 days, with 3 vessels, was 6 or 6½ fathoms; but it ought to be avoided by large ships, particularly in the S. W. monsoon, for a large ship would *strike* on it when the sea is running high,* which has been already mentioned under the directions given for sailing from Bombay to the southward in the S. W. monsoon.

Geo. site of Underoot.

UNDEROOT, in lat. 10° 48′ N. lon. 74° 0′ E. by a series of lunars, or 1° 50′ W. from Tellicherry by chronometers, is low, well planted with cocoa-nut trees, about 3½ miles in length east and west, and 1½ mile in breadth; it is defended by a wall of coral rocks all round, through which there is only one small passage for boats. This island on the south side is steep to the coral wall, but on the N. and N. E. sides, an extensive coral bank projects to the distance of 5 or 6 miles, with various depths on it from 8 and 10, to 16 fathoms. About a mile from the island, the bottom on this bank is sandy in 10 and 12 fathoms, where

* The mountainous sea rolling over this rocky bank during the strength of the S. W. monsoon, appears sometimes to break on it; for the Minerva of Bombay, in 1787, bound to China, by getting too far from the coast in blowing weather, passed close to it in the night, which was discovered by the sea rolling over it in high broken waves.

vessels might anchor during southerly winds, abreast of the houses scattered along the north side of the island. The bank is steep to, and the soundings on both the exterior and central parts of it, are generally 10 and 12 fathoms, over a bottom of coral. Turtle may be got here; the water is tolerably good, and the natives are poor, and inoffensive. This island is about 38 leagues distant from Mount Dilly, which is the nearest land of the continent, and it is the most proximate of the Laccadiva Islands to the Malabar Coast. From Kalpeni, it bears about North, distant 13 leagues; the channel between them appears to be clear.

Geo. site of Kalpeni;

KALPENI, extending from lat. 10° 4′ N. about N. by E. ½ E. to lat. 10° 10½′ N., is composed of 2 narrow low islands,* joined together by a reef above water, having 2 islets close to the S. W. end, where its greatest breadth is about ¾ of a mile.

This island, is in lon. 73° 56′ E. or 3° 4′ W. from Anjenga, and bears South from Underoot about 13 leagues. On the west side, a steep coral reef with rocks above water, projects out nearly 2 miles, and joins to the two extremes of the island. This reef is steep to, on the outside, with high breakers, no soundings till close to the surge; through one part of it, there is a narrow channel with only 1½ and 2 fathoms, and from 3 to 4 fathoms on the Coral Flat inside. The boats of the natives lie at the S. W. part of the island, nearly south from the gap or channel in the reef, about 3 miles distant. The southern or largest island, where there are a few small villages, is well planted with cocoa-nut trees, and has soundings 9 or 10 fathoms at the south-end, corally bottom.

Nine Degrees' Channel.

NINE DEGREES' CHANNEL, bounded to the southward by the Island Minicoy, and to the northward by the Islands Seuheli-Par and Kalpeni, is about 36 leagues wide, and clear of danger. The southern extremity of the reef that surrounds Seuheli-Par, is in lat. 9° 54′ N., from which Minicoy bears S. S. E. ¼ E., and from Kalpeni it bears S. by W. ¾ W., about equal distance from both, 36 or 37 leagues.

Directions to sail through it.

During the strength of the N. E. monsoon, or at other times when light or variable winds prevail, a ship pursuing this route, may keep nearly in mid-channel, in from lat. 9° to 9° 20′ N., or rather nearest to the north side, if the wind blow steady from that direction, as the currents frequently set to the southward among those islands in both monsoons; although they set sometimes to the northward, when the winds are light or variable in the N. E. monsoon. But in borrowing toward the north side of the channel, do not approach the Seuheli-Par Isles, particularly in light winds, on account of their extensive reefs.

With northerly winds, this channel seems preferable to the other south of Minicoy, as a ship will not be so liable to drift near the head of the Maldiva Islands, if the wind should become faint, and the current be setting to the southward.

Geo. site of Minicoy.

MINICOY, OR MALICOY, in lat. 8° 17′ N. lon. 73° 18′ E. or 3° 42′ West from Anjenga by chronometers, is about 6½ miles in length and ½ a mile in breadth, extending in the form of a crescent from N. E. to S. W. with the concave side to the N. W., where a circular coral reef projects out about 3 miles, and is joined to the extremes of the Island. On the reef near the west point of the island, there is an islet with trees on it; and at the north end of the island, there is a passage through the reef, with 2 fathoms the deepest water, through which the boats and small vessels pass, but it is narrow and intricate. Where they lie within the reef, the water is deeper, 2½ and 3 fathoms over a bottom of hard coral, but chains would be necessary to secure a vessel, were there any swell. This island is very populous, and the natives are hospitable; it is well planted with cocoa-nut trees, and may be seen from the deck of a large ship about 3½ or 4 leagues.

* The largest is called Kalpeni, and the northern one Cheria, by the natives.

Eight Degrees' Channel. EIGHT DEGREES'. CHANNEL, although not so wide as the other north of Minicoy, described above, is nevertheless very safe, and about 23 leagues broad, being formed between the head of the Maldiva Chain and the Island Minicoy, the latter bearing from the head of the Chain about N. by E. 23 leagues. By mean of many ships observations, the north extremity of the Maldiva Chain is in lat. 7° 6′ N. lon. 73° 7′ E., and Minicoy extends from lat. 8° 16′ to 8° 19′ N.

Geo. site.

Sailing directions. In passing through the Eight Degrees' Channel, it is prudent to keep nearer to Minicoy than toward the Maldivas, as the current sets generally to the southward, particularly in light winds, and during the N. E. monsoon, although it changes at times, and sets to the N. W. and Northward: but in the strength of the S. W. monsoon, mid-channel is the best track, or rather inclining toward the head of the Maldivas, if the wind should happen to blow strong and steady at S. W. or Southward.

If ships coming from the westward, bound to Ceylon or to the Bay of Bengal in the strength of the S. W. monsoon, do not pursue the route through the One and a Half Degree Channel, the Equatorial Channel, or any of the southern channels of the Maldivas, or to the south of all these islands; they may, in such case, adopt either the Eight or Nine Degrees' Channel, at discretion, although this route is more circuitous than the former.

With the wind steady at S. W., and their situation correctly ascertained by observation, the Eight Degrees' Channel may be followed, as it is rather more direct than that to the north of Minicoy; brief directions for passing through these channels having already been given in the section, "PASSAGE from the COMORO ISLANDS, toward INDIA."

## *MALDIVA ISLANDS, their extent, and SEPARATING CHANNELS, with SAILING DIRECTIONS.*

General description of the Maldivas. MALDIVAS, OR MALDIVES, consist of a chain or range of innumerable low islands and rocks, extending nearly on a meridian line from lat. 7° 6′ N. to lat. 0° 40′ S.: the large islands abound with cocoa-nut trees, and are generally inhabited; but many of the others, are only sand-banks and barren rocks. The greatest breadth of the range is about 20 leagues, formed of large groups or clusters, sometimes double, which are called by the natives Atolls, or Atollons. Each of these, is circumscribed by islands and rocks, with others scattered inside in great numbers, upon the shoal coral bank that forms their base. There is said to be 13 large Atolls, from 5 to 10 leagues in diameter, with several other detached islands or rocks in the channels that separate them, some of which are wide and safe, as will be seen hereafter; but many of these channels are intricate, safe only for vessels that row with oars, as the currents run strong through them to the east or westward, generally with the prevailing winds.

Besides the channels which separate the different Atolls, there are various openings* through their exterior reefs, used by the Maldiva boats in passing from one Atoll to another, some of which have no soundings, or very deep water, and will admit large ships. There are no soundings in the channels which separate the Atolls, nor until close to the reefs; whereas, within the surrounding reefs, some of these Atolls have moderate depths, from 6 or 8, to 15

* These passages or gateways, are called *Bari* by the natives, and are mostly destitute of soundings. There are generally one or two of these gateways at the extremities of each Atoll, admitting a passage to the boats if driven to leeward by the tide or current, in crossing over from one Atoll to another.

and 20 fathoms coral and sand, where a ship might occasionally anchor; but some of the Atolls are mere coral flats, only navigable by the country boats, and others have very deep water upon them in some places.

Monsieur Fortin, who commanded a vessel from the Island Mauritius, says, he has passed through all the channels which separate the northern Atolls, and found no anchorage outside of the Atolls, but within the reefs circumscribing them, good anchorage may be found of 20 and 30 fathoms, upon a bottom of white sand, mixed in some places with coral.

Better known formerly than they are at the present time.

Although these islands, have long been thought to present an impenetrable barrier of 480 meridional miles to ships bound to Ceylon, or the southern part of Hindoostan, consequently *dreaded* and *avoided* by modern navigators, yet the early traders from Europe to India, were much better acquainted with them than we are, and often passed through some of the channels which separate the Atolls, *without the apprehension of danger*. To restore this lost knowledge, therefore, has been a primary object of my attention for several years; and, as much time may probably intervene, before any regular survey of these remarkable islands is projected, or undertaken, I think it may be acceptable to oriental navigators, to have exhibited to their view, the information obtained from the journals of the Company's ships, or otherwise communicated to me by my friends; in order that the situations of the principal channels, navigable by large ships, may be approximated, if possible, nearly to the truth.

Tilla Dou Matis Atoll.

TILLA DOU MATIS, OR HEAD OF THE ISLES, the northernmost Atoll of the Maldivas, seems to be of considerable extent from north to south, and also from east to west. The isles which form the exterior boundary of this Atoll, appear on the north side to be protected and chained together by a reef, but on the east and west sides, there are several openings between the isles, for in those parts, some of them seem to be steep to, and not chained together by reefs as generally represented, which will be seen by the following extracts.

Dover Castle passed along the north side of it.

Dover Castle, from England bound to Madras, fell in with the head of the isles, or north side of the Atoll, a little after day-light, on the 11th of August, 1798, ranged along the northern or N. E. part of the chain at the distance of 2 miles, and at 8 A. M. it bore from S. ½ E. to W. ½ S. distant 5 miles. They counted 36 islands, chained together by rocks to the northward, on which the sea broke very high, with smooth water within the breakers; and a number of small craft were seen passing from isle to isle. At noon, lat. observed 6° 50′ N. then on the N. E. side of the Atoll, bearing from N. W. to S. W. by W. distant 3 or 4 leagues.

Doddington saw the east side of it in the night.

Doddington, from England, bound to Bombay, on the 22d of January, 1749, at 10 P. M. fell in with the eastern side of the north Atoll, in lat. about 6° 45′ N. when steering west to make the east part of Ceylon, but they soon perceived their mistake, by having no soundings, and the islands to which they nearly approached, seen by bright moon-light, being very low. They immediately tacked, and with the wind at N. N. E. stood off east till noon, and then observed in lat. 7° 10′ N. the islands of the north Atoll bearing from West to W. by S. ½ S., seen from the mizen top. She was carried to the northward of the islands by the current, although steering east, having experienced a northerly set of 24 miles during the 24 hours. From hence, with northerly and variable winds, she reached Cochin Road on the 5th of February.

East side seen by the Rooke.

The Rooke, bound to the Malabar Coast, on the 4th February, 1700, saw the east side of the north Atoll, or Tilla Dou Matis, the nearest island situated in lat. 6° 40′ N. was then about 2½ leagues distant, with 5 other islands on each side of it. Several Boats came near, but would not come along side. These islands are not tied together as laid down in the charts, but are separated from each other, and have fine passages between them: a strong current set us to the northward along the islands, so that by 1 A. M. we were carried within

2 leagues of the northernmost island, and at day-light none of them were visible. Variation 7° W.

West side seen by the King George.

The King George, bound from England to Bombay, got close to the western part of this Atoll in the night of the 23d January, 1721; steering east with the wind at N. N. E., at 3 A. M. perceiving high breakers close under our lee, tacked immediately, and stood off N. W. till 5 A. M., then tacked to the eastward. At sun-rise, saw 3 small islands bearing from N. by E. to N. E. distant 7 or 8 miles, surrounded by a great shoal, dry in many places, with breakers as far as could be discerned, bearing from North to E. by N. Stood within 2 miles of them, and got no ground at 100 fathoms. This I take to be the shoals of the Bassas d'Padra Banca, on the N. W. end of the Maldivas: I tacked from the shoal at 8 A. M. and at 11 A. M. part of the breakers in sight bearing E. by N. distant 4 or 5 leagues; steered N. W. ½ N. 3 miles till noon, lat. then observed 6° 34′ N. which makes the body of these breakers in the same lat.

and by the Josiah and Abington.

The Josiah, in company with the Abington, after passing through the Cardiva Channel to the westward, in March, 1704, steered to the north-west and northward, and on the 10th of March, saw 10 of the islands which form the N. W. part of the North Atoll, bearing from East to S. by E. sent a boat armed to one of the islands, which returned in the evening laden with cocoa-nuts, the inhabitants having left their houses, and fled to the woods when our people landed.

By mean of several ships observations, by moon and chronometer, corroborated by those of Mr. Topping the Astronometer, of Madras Observatory, the northern limit of Tilla Dou Matis, is situated in lat. 7° 6′ N.* lon. 73° 7′ E. The southern extremity of this Atoll is not well ascertained, but it is probably in lat. about 6° 20′ or 6° 25′ N.

Geo. site.

Atoll, Milla Doue Madoue.

MILLA DOUE MADOUE, is the nearest Atoll to the south of the former, separated from it by a channel, *said to be* narrow and unsafe for ships; although it was probably between these Atolls, that the French ship La Reine sailed in 1750, through an intricate channel, having *apparently* entered it from the westward in lat. about 6° 5′ N, and was first obliged to steer to the S. Eastward, then to the eastward, in forcing her passage through this dangerous place.

Pirard La Val, who was long at the Maldivas, (having been shipwrecked there) says this channel is navigable in day-light, although very intricate.

This Atoll, is thought to extend southward to lat. about 5° 30′ N. and like the north Atoll, is circumscribed by many inhabited islands; one of the largest of these, appears to be Mafer, in lat. about 5° 40′ N. situated at the S. E. part of the Atoll, which in this part seems safe to approach, with anchorage among the islands, as will be seen by what follows.

Recovery makes this Atoll.

Ship Recovery, from Bengal, bound to Kings Island Maldivas, 20th March, 1682, lat. observed 5° 30′ N. wind East and E. N. E., saw the Maldiva Islands bearing N. W. by W. distant about 5 leagues.

March 21st, little wind in the night at eastward, with a hard squall at 4 A. M. find the current has set us to the N. W. among the islands, which are almost round us. At 10 A. M. during another hard squall at east, a boat came to us with a pilot, who anchored us at noon in 25 fathoms sand, Mafer, or Mabar Island bearing E. S. E., Watten E. by N., Landu or Lando N. E. by E., and Malendu or Marandue N. E.

Anchors on the west side of Isle Mafer.

Lay at anchor here, till the 26th, the weather being unsettled, with rain, thunder, and lightning; calms on the 22d and 23d, and on the 24th stormy at E. N. E.

* The observations of the Josiah, and Abington, in 1704, would place the isles at the N. W. part of the Atoll, considerably farther to the northward, but observations for lat. taken at that time, were often incorrect, from the instruments used, and the tables of the sun's declination, being both very imperfect.

March 26th, at 4 A. M. weighed (having had 2 anchors down for security) and with the wind at N. E., steered S. S. E. and South till 6 P. M. then anchored in 24 fathoms.

March 27th, at 2 P. M. weighed with the wind to the eastward of north, and steered between 2 islands of the Padypolo Atoll, and at 9 A. M. anchored in 22 fathoms near the Island Sediva or Seckdiva, situated on the southern part of the Atoll, and having upon it a pagoda. Passes southward among the Isles of Padypolo Atoll, and anchors there.

March 28th, with the wind to the westward of north, weighed at 1 A. M. and at 4 P. M. passed the Island Cardiva or Cordue, expecting to anchor, but could find no ground within a cable's length of the ledge of rocks, projecting round about ½ a mile from the shore; so we passed it, expecting to find anchorage at another Island to the south, called Gafor or Gafer. Could find no anchorage at Cardiva.

March 29th, steered South and S. S. E. till 7 P. M. with a fresh wind at W. N. W. till we came near the Island Gafer; our pilot being afraid, and having no soundings, laid the ships head to the northward till 2 A. M. then tacked to the southward, and at 8 A. M. passed on the east side of that island, steering south with a light breeze at W. N. W., and the current setting northward. About 3 miles to the south of Gafer, there is a strait, not above 2 cables lengths from side to side, through which we passed. From this narrow strait, the small Island Cagui, or Coddue bears south, where we found soundings of 19 fathoms, Muckandu Island bearing S. S. W., having had none since we left the 4 islands at Seckdiva. Passed Gafor. Entered by a narrow Strait, and

March 30th, at 5 P. M. anchored in 32 fathoms at the Island Muckandu, it bearing west, distant about 3 miles, our pilot being afraid to carry our ship nearer to King's Island till he obtains permission; we suppose the island is one of those in sight. At 7 A. M. our pilot went to a boat bound to Maldiva, and was told he need not fear to take the ship there: when he returned, we weighed with a small breeze at west, and steered various courses, luffing up for one shoal, and bearing away for another, which are easily discerned. Anchored on Male Atoll, and sailed to the southward over it,

March 31st, at 5 P. M. anchored with Maldiva Island bearing S. S. W. about 2 leagues. Weighed in the morning, and have turned to, and fro, all this day.

April 1st, at 3 P. M. anchored in 25 fathoms, the wind fresh at west. At day-light weighed, and at 8 A. M. anchored at Maldiva Island: found here, 2 Surat ships, 2 Achen ships, and 1 Bengal ship arrived about an hour after us, which left that place about a month before us. We were 30 days from Balasore to our first anchoring among the islands, and 15 days more, till we arrived here. until she arrived at King's Island,

From this abstract, it appears, that the Recovery first anchored on the west side of the Island Mafer, on the S. E. part of the Atoll Milla Doue Madoue; from whence, she steered southward *apparently* over Padypolo Atoll, and anchored on its southern part near the Island Sediva. From this anchorage, she steered southward, passed the Islands Cardiva and Gafor, and then entered through a narrow passage into the north part of Male Atoll, upon which Atoll she found soundings of various depths, and anchored several times in her passage directly over it, steering southward for King's Island. So, that it appears, some of these Atolls may be navigated by large ships in day-light, and places found, where they might occasionally anchor in the night. Remark.

PADYPOLO ATOLL, is the 3d from northward, said to be of circular form, and adjoining to the south extremity of Milla Doue Madoue; its southern extremity seems to be in lat. about 5° 10′ or 5° 16′ N. and forms the N. E. boundary of the Cardiva Channel; having anchorage on it, near the Island Sediva, as shewn in the preceding abstract of the Recovery's journal, that ship having apparently sailed directly over the Atoll of Padypolo. Padypolo Atoll.

The Dawson, East Indiaman, from England bound to Bombay, fell in with the east side of Padypolo Atoll on the 4th of Jan. 1721, and when the observed lat. at noon was 5° 30′ N. the Islands bore from West to N. W. ½ W. about 5 leagues. At noon 5th, lat. observed 5° 22′ N. the islands bearing W. N. W. 5 or 6 leagues. At noon 6th lat. observed 5° 44′ N. The Dawson fell in with this Atoll,

Islands on the east side of Atoll Milla Doue Madoue bearing from W. N. W. to South, distant 3 or 4 leagues.

and was drifted close to an island of Milla Doue Madoue Atoll.

The winds being light from East and N. E.ward with calms, and the current setting to the N. W. she was carried close to one of the islands at 9 P. M., notwithstanding every exertion made to tow her off by the boats: and as one of the boats got soundings between the ship and the island, the anchor was dropped in 40 fathoms, and she brought up in 7 and 5 fathoms with two anchors, shortly after a third was let go under foot. About 2 ship's lengths astern, the boat found only 17 feet rocky bottom, and the island had a reef projecting out from it in a northerly direction. Before day-light, the ship drifted off this dangerous rocky ledge into no soundings, when the anchors were hove up, and with all the boats towing off to the eastward, she got well out from the islands by noon on the 7th, lat. then observed 6° 27′ N. with the islands on the N. E. part of Milla Doue Madoue, bearing from S. W. by S. to W. by S. 5 or 6 leagues.

Malos Madou Atoll.

MALOS MADOU, the 4th Atoll, is situated to the west of Padypolo, and nearly joins to it, and to the S. W. point of Milla Doue Madoue. The French ship Corbin, was wrecked on the west side of this 4th Atoll, 17th June, 1602, in which ship was Francis Pirard de La Val, before mentioned, who gave to the public a particular description of the Maldivas, acquired during a long residence among them.

The Corbin, intended to have passed to the northward of all the Maldivas, but being much to the eastward, of account, they saw in lat. about 5° N. some shelves surrounding little islands, and were driven upon the reef at the distance of 4 or 5 leagues from the islands. La Val, says, there are only 4 channels of the Maldivas navigable by large ships, which are frequently visited by strangers, when carried among those islands by currents, the northern of which channels, he states to be on the north side of Malos Madou, near where the Corbin was wrecked.

Goidu.

GOIDU, is an extensive reef with some small isles on its eastern part, and may be considered as part of Malos Madou, being, *as supposed*, nearly joined to the south extremity of that Atoll, and forms the boundary of the Cardiva Channel at the N. W. part, Padypolo Atoll, bounding it to the N. E.ward, as mentioned above.

Cardiva Channel, is the best of the northern ones;

known in early times.

CARDIVA, CARIDOU, OR FIVE DEGREE'S CHANNEL, seems to be the best of the channels which separate the northern Atolls, and is the second in order from the northward, (mentioned by La Val,) capable of admitting large ships. As this channel was better known to Europeans about a century ago, than it appears to be at the present time, it may be useful to endeavour to restore some of this lost knowledge, by stating the substance of all the information obtained, with a view of approximating to its true situation.

Description of it by French navigators.

Monsieur Fortin, who commanded a privateer from the Island Mauritius, says, he has run through all the channels which separate the Northern Atolls, and found no anchorage outside of any of them; but within them, good anchorage may be found of 20 and 30 fathoms, on a bottom of white sand. He, also, says, "there is particularly a channel between lat. 4° and 5° N. which would be adopted if its precise limits were known." This can be no other than the Cardiva Channel.

Mons. Chardin, another French navigator, describes a good channel to lie exactly in lat. 5° N. through which he had passed, and saw the islands on both sides of him at a considerable distance, and that it is frequented by the French vessels belonging to the Island Mauritius.

Abington and Josiah fall in with the east side of the Maldivas,

Abington, and Josiah, in company, bound from England to Madras, discovered by the view of 3 islands, that they were on the east side of the Maldivas, on the 29th of Feb. 1704; the current setting to the N. W. with light N. E. winds, they were driven near one of the

islands on the east side of Poulisdous Atoll, in lat. 3° 36′ N. which a boat was sent to examine, but could not land on account of the adjoining reef. After standing off to the eastward during the night, they tacked and steered by the wind to the northward, till March 2d at noon, when 2 islands were seen, the northernmost bearing N. W. by W., and the other S. W. by W. distant about 4 or 5 leagues, with the appearance of islands to N. N. E. lat. observed 5° 14′ N. by the Abington, and 5° 0′ N. by the Josiah. Variation per amplitude 6° 12′ W. The island which bore S. W. by W. must have been Cardiva, and those to the northward must have been the isles on the south part of Padypolo Atoll.

March 3d. Kept plying to windward, but were driven by the current to the westward among the islands, the southernmost at 6 P. M. bearing S. by W. 2 leagues, and the northernmost from N. by W. ½ W. to N. by E., there being 10 isles in sight. The islands at this time, by the Josiah's journal, bore from S. by W. to N. E. by E. Variation 6° 12′ W.*

At 11 P. M. the southernmost island bore S. S. E. ½ E. distant 1 league. Found the current set W. by S. 2 miles per hour, which had driven us considerably to leeward among the islands during the night; at 6 A. M. the east point of the southernmost island (supposed Cardiva) bore S. E. ½ E. 5 miles, and the northern islands E. N. E., at which time sent our pinnace after 2 Maldiva boats, and she brought the master of one of them on board, who said there was a passage clear through to the westward. and pass to the westward through the Cardiva Channel.

We therefore, bore away, and kept this man on board till noon, then sent him away in his boat, being nearly through the passage, having made a west course 30 miles from the preceding noon. You may steer S. W. by S. and S. S. W., which will carry a ship through, without any danger; but from the westernmost island, a ledge of rocks stretches 2 or 3 leagues to the southward, and as the current sets strong to the westward, you must give the island a good birth, to prevent being drifted toward the reef, which is steep to, without soundings.

At noon, lat. observed 5° 17′ N. by the Abington, but Mr. Templer, an officer of this ship, made it 5° 2′ N., and the Josiah's observation made the lat. 4° 57′ N. having 12 islands then in sight, with the westernmost island that forms the north side of the channel bearing W. S. W., and the northernmost islands N. N. E.

March 4th at 1 P. M. hove to, and sent the boat to the westernmost island; she could neither land, nor get soundings close to the reef, but got some cocoa-nuts and plantains from one of the native boats. At 2 P. M. saw an island bearing S. by E. a great way to seaward, (supposed Todu) bore away between it and the westernmost island that forms the north side of the channel, from which I take a departure, and make it in lat. 4° 58′ N. by good observation. This channel lies in lat. 5° 0′ N. by our observations. Said to lie in lat. 5° N.

At 4 P. M. the islands bore from N. E. by E. to S. by E., and the reef that projects from the westernmost island bore N. N. W. Variation at 6 P. M. 6° 38′ W.

The westernmost island here described, is situated in lat. 4° 58′, or 5° 0′ N. by the observations of Mr. Templer and those of the Josiah, nearly agreeing, (the Abington's observations being about 14 miles more to the north,) and is the outermost island of the small Atoll of Goidu, which together with its extensive reef projecting to the South and S. W., forms the northern boundary of the west end of the Cardiva Channel.

The Island Cardiva, at the eastern entrance of this channel, appears by the observations of these ships to be in lat. about 5° 0′ N., and if a ship should be situated near this island, or between it and the south part of Padypolo Atoll, a course steered from thence S. W. by S. to S. S. W. about 8 leagues, will carry her through the channel, leaving Cardiva, Gafor, and Todu to the south; and Padypolo and Goidu to the north. Directions for sailing through it.

The Island Todu, situated in lat. about 4° 42′ N., is the southern boundary of the western entrance of the channel, and bears nearly S. by E. from the western extremity of Goidu Reef, which bounds the north side of the entrance. A ship, therefore, about to enter the

* In 1600, the variation here was 17° W. at present 1816, it is between 1° and 2° W.

channel with the wind at S. W. or southward, should keep in lat. from 4° 42′ to 4° 48′ N., to fall in with the Island Todu; but if the wind should be at N. W.ward she ought to keep in lat. 4° 50′ to 4° 55′ N. in order to fall in with the S. W. or outer edge of Goidu Reef, then edge away to the eastward along its southern extremity, and afterward steer to the N. E. ward to pass on the north side of the Island Cardiva; although the passage to the south of that island, between it and the Island Gafor, appears also very safe.

The course through the Cardiva Channel, will be about E. N. E. and W. S. W. if the passage on the south side of Cardiva Island is pursued, but the passage to the north of this island seems preferable, being much wider.

Caution requisite.

As our knowledge of this channel is still very imperfect, the foregoing directions should be used with caution; because the latitude observed upward of a century ago, when nautical astronomy was in its infancy, was liable to considerable error, from various causes; yet, the preceding approximated latitude of the Cardiva Channel, is probably near the truth, being corroborated also, by the following observations of the Concord, which ship passed through it to the eastward.

Concord takes the Maldiva Islands for Ceylon;

Concord, from England bound to Madras, steering N. N. E. for the Island Ceylon, wind at N. W. by W., at 1 A. M. 8th September 1709, saw land on the starboard bow: at ½ past 2 A. M. bore away E. by N., thinking we were in a fair way to round Ceylon, but soon after, seeing land to the S. W. which we could not weather, tacked and made several boards till 9 A. M., then found we were on the west side of the Maldivas. Sent our boat to sound, which rowed toward several Maldiva boats seen among the islands, but they fled at her approach; saw also houses, and people on the shore.

and passes to the E. N. E. ward through the Cardiva Channel.

Perceiving from the mast head a large opening to the eastward, we resolved to proceed through, and found it to be a LARGE COMMODIOUS CHANNEL, had no ground at 40 fathoms all the way through. At noon, we were within the islands, the westernmost island in sight, bearing W. by N. distant 3 miles, lat. by good observation 5° 0′ N. having been set 35 miles to the southward of account in 5 days. These islands are very low, steep to, and covered with trees: I judge this to be the *Five Degrees Channel*, we are in.

Sept. 9th. With fresh N. Westerly winds, steered from noon yesterday E. by N. 4½ miles, E. N. E. 9½ miles, N. E. by N. 4½ miles, and E. N. E. 4½ miles till 5 P. M., having previously at 2 P. M. discerned an island bearing E. N. E. distant about 5 leagues, some islands also in sight to the northward, but none to the eastward except that mentioned (supposed to be Cardiva.)* At 5 P. M. it bore south 2 miles distant, and a boat coming from the shore, lay by for her, but she would not venture alongside, and returned toward the shore.

At 6 P. M. made sail, seeing no more islands to the eastward, the easternmost then bearing S. W. ½ S. distant 2 miles, which appears to be the largest island of any we have seen, having discerned about 19 islands from the mast-head. From 6 P. M. steered E. N. E. till noon, course N. 62° E., distance 112 miles from the preceding noon.

Gafor Island and Reef.

GAFOR, OR GAFER ISLAND, in lat. about 4° 46′ N. is situated about 3 or 4 leagues south of the Island Cardiva, and it is said to lie at the eastern edge of a large circular reef, which reef has been generally marked as having anchorage at its western extremity; but there are no soundings close to the island.

Male Atoll; Geo site of King's Island

MALE ATOLL, gives name to the whole, as Maldiva, or King's Island, is situated at its south-east part, in lat. about 4° 10′ N. or 4° 16′ N. lon. about 73° 42′ E.: this Atoll is 10 or 11 leagues in extent north and south, its northern limit approaching close to the Island Gafor, where there is a passage for ships about S. by E. from Gafor, through

* This is said to be the largest of any of the Maldiva Islands. For a farther description of the Cardiva Channel, see the following account of the Poulisdous Channel.

which the Recovery entered, and sailed over the Atoll to King's Island, as described above.

The anchorage at King's Island, is within that island and a part of the reef, in sandy bottom, mixed with bits of coral, rendering chain cables of great utility to a vessel intending to touch at this place.

It is customary to moor with 2 or 3 anchors, and hawsers fast to the shore, to prevent a vessel from tending or sheering about, as the road is contracted, and seems not very safe for large ships, the anchorage being too near the shore. The boats belonging to the natives, lie inside of the rocks, in from 1 to 2 fathoms water, and the passages between these rocks are secured at night with booms.

King's Island is the only part of the Maldivas, to which vessels sometimes resort from Bengal to trade for coir, cowries, &c.; but this trade is now, nearly discontinued by Europeans, being carried on by the Maldivans in their own vessels, a sort of large boats, which generally arrive at Bengal in fleets, in the S. W. monsoon, with the produce of those islands, and return in December or January, with cargoes of rice, sugar, piece goods, &c.

There is said to be 2 gateways or navigable passages, at the N. W. part of this Atoll, 2 at the S. W. part, several on the east side, (where are many small isles,) exclusive of the principal entrance at King's Island, and that at the northern extremity.

ARI ATOLL, lies to the S. W. and Westward of Male Atoll, at a considerable distance, and is said to extend from lat. 4° or 4° 5′ N. nearly to lat. 4° 30′ N., its western extremity being in lon. about 73° or 73° 2′ E. The Dutch ship Ravenstein, was wrecked on the north part of this Atoll about 2 centuries ago, occasioned by an error in the reckoning. Ari Atoll; Geo. site.

Captain Antonio Klink, who commanded the Ravenstein, places the largest island of this Atoll, named Matuaria, upon its western side, in lat. 4° 15′ N., having about 3 or 4 miles to the northward, a gateway through the reef with no soundings, leading into the Atoll. He also marks an opening at the N. E. part of the Atoll, without soundings; and inside of the Atoll, several parts are said to be destitute of soundings, by this navigator's account. In the old charts, the west side of this Atoll is delineated as a continued reef, without any islands, whereas Matuaria the largest island of the Atoll, is situated with many others on this part of it. Dutch account.

The Snow Fancy, bound from Bombay to Port Jackson, fell in with the islands on the western edge of this Atoll, and the following extract relating to them, and to some of the islands of the southern Atolls, is taken from the journal of Captain William Denniston, then an officer in that vessel. Snow Fancy's description of the Isles on its western part;

April 25th, 1794, at day-light, saw one of the Maldiva Islands bearing S. E. by S. distant about 5 leagues, tacked to the N. W.

April 26th, steering S. by W. with the wind at W. by S., at 2 A. M. hard breakers on the bow, and saw 4 Islands bearing from S. ¼ E. to S. S. E. ½ E. distant about ¾ of a mile, tacked to the N. W., and at day-light saw 6 islands bearing from S. 48° E. to S. 2° E., distant about 3 leagues, and a *single* island bearing N. E. distant about 5 leagues, another in sight from the mast-head bearing S. ¼ W., 11 islands being visible from thence.

By observations of the sun and moon, taken in this vessel, the single island seen bearing N. E. is in lat. 4° 24′ N. lon. about 73° 15′ E. Other islands, in lat. 4° 16′ N.; and the westernmost of the 11 islands of Ari Atoll, seen from the mast-head bearing from S. ¼ W. to S. 48° E. is situated in lat. 4° 9′ N. lon. 73° 7′ E. and geo. site of western part.

From the west part of Ari Atoll, the Fancy stood to the S. S. W. and Southward, with squally weather and rain from westward, and on the 26th of April, saw at noon, 6 of the islands on the west side of Suadiva Atoll in lat. 0 44′ N. On the 30th she saw the south Atoll, Pona Molubque, and passed between it and Addon Island, on the 2d of May. She passed southward from thence, and afterward through the south channel.

Poulisdous Channel; perhaps dangerous,

POULISDOUS CHANNEL, OR FOUR DEGREES' CHANNEL, bounded to the north by Ari Atoll, and Male Atoll, and a detached reef to the south of the latter; and on the south side by Poulisdous Atoll is described by La Val, to be narrow, with the sea swelling into great black surges, and boiling like water on a fire, rendering it very terrible. These are, however, probably only whirlpools, or strong eddies, produced by the tide or currents, striking against the steep coral reefs which contract the channel; and the black colour of the water in it, is perhaps the effect of its great depth, for when any of the water is drawn up in a bucket, it is no longer of a black aspect.

but not known.

This channel, is thought to lie in lat. 4° N., probably rather under that parallel a few miles; but whether it be dangerous or not, for large ships, cannot at present be stated; therefore, it ought to be avoided until better known.

Capt. Davis passed through one of these channels, having anchored previously.

The English Navigator, Captain Davis, describes a channel to lie in lat. 4° 15′ N. through which he sailed when pilot of a Dutch ship bound to India, but this lat. passes directly through among the islands of the Ari Atoll; he must, therefore, either have passed more to the southward, through the Poulisdous Channel, or farther to the northward, through the Cardiva Channel; and it may be inferred from his account, that the latter was the channel he passed through.

On the 23d of May, 1600, this navigator fell in with the Maldiva Islands, and anchored, where they remained till the 27th,* and as none of the Maldiva boats would come close to the ship, one of them was brought alongside by the ship's boats.

"May 27th, set sail, and happily struck into the true channel, called *Maldiva*,† which lies "in lat. 4° 15′ N. where the compas has 17° of West variation. There are vast numbers "of ships from all parts, that go through this channel, which is the only safe sailing, it being "generally fatal for a ship to miss it."

It was probably the Cardiva Channel.

The channel here described, must have been the Cardiva or 5° Channel, which is certainly the best of those among the northern Atolls, and was much frequented by European ships at the period here mentioned, but Captain Davis places it too far south; although he probably entered it close round the north end of Ari Atoll, in lat. about 4° 30′ N. and passed between it and Isle Todu, which seems safe, and perhaps is preferable to the entrance between Todu and Goidu Reef, with a Southerly or S. W. wind: at that period, navigators were often liable to err 15 or 20 miles in the observed lat.

Poulisdous Atoll, seems to afford a passage over it.

POULISDOUS ATOLL, situated on the south side of the channel of this name, or the 4° Channel, is said to be of circular form, extending from lat. about 3° 53′ N. to 3° 20′ N. and directly south of Male Atoll. Although it is delineated on the *old* charts as a continued great reef, destitute of islands, there nevertheless, are several islands upon it; and the Rochester appears to have passed directly over this Atoll, steering on a N. Westerly course, as will be shewn hereafter.

Molucque Atoll.

MOLUCQUE ATOLL, lies to the South and S. S. E.ward of Poulisdous Atoll, and like it, is of circular form, thought to extend from lat. about 3° 12′ N. to about 2° 45′ N., having several islands upon it in various parts; with a reef called Natar, between it and the next Atoll to the westward.

Nillandous Atoll.

NILLANDOUS ATOLL, situated to the west of Molucque Atoll, has been hitherto represented as an oblong reef destitute of islands, separated in the middle by a narrow gut, and extending from lat. 3° 33′ N. to 2° 52′ N.; but it will be seen from the following description, that similar to the other Atolls, this has also, islands upon it, and probably extends a little farther north than the lat. stated above as its northern limit.

* The lat. of this anchorage is not mentioned.

† This name seems to have been applied to the Cardiva Channel in early times.

Albemarle, from Bombay bound to England, on the 31st of October 1707, at 10 A. M. saw the islands on the west side of Nillandous Atoll, bearing from N. E. to East, distant 5 or 6 leagues: from this time, were becalmed great part of the day, lat. observed at noon 3° 3′ North, the islands then bearing from N. E. to East, which made the westernmost islands of the Atoll, in the same lat. as observed. Albemarle's account of it.

From this situation, the Albemarle steered to the S. S. Westward with light winds, without discerning any other islands until the 7th of November, when the N. Easternmost islands of Suadiva Atoll, were seen bearing from W. by N. to S. W. distant 5 or 6 leagues, the northernmost of which, she made in lat. 0° 51′ N. by noon observation. These were set down as the *imaginary* islands Diego Rays, thought to lie considerably west of the Maldivas, which do not exist. It is somewhat remarkable, that from the west side of Nillandous Atoll, although steering S. S. W.ward, the Albemarle was carried by an easterly current through the 1½° Channel, without knowing it, or without seeing any of the islands until she got to the eastward of Suadiva Atoll, as stated above. From whence she was carried through the 1½° channel by the current.

EXCLUSIVE OF THE CHANNELS BETWEEN THE ATOLLS, it has been already observed, that there are passages through among some of the islands which form these Atolls; a remarkable coincidence of this fact, will be seen by the following abstract of the Company's ship Rochester's journal, bound from Bencoolen to Madras; which ship appears to have crossed directly over 2 or 3 of the Atolls, steering to the N. W. and N. N. W.ward, and made a passage through among the islands, from their eastern limit to the westward, without getting any soundings. Passages over some of the Atolls;

Rochester, 14th Feb. 1715, wind E. N. E. steering north, saw at sun-rise, 2 of the Maldiva Islands on the lee bow; steered N. by W. 7 miles till 8 A.M. then saw 8 more islands bearing from N. W. to West distant 5 leagues; from 8 A.M. steered N. N. W. ½ W. 12 miles till noon, lat. observed 3° 0′ N., then 13 more islands bearing from S. S. W. to W. ½ S. distant about 3 leagues. Saw 3 Maldiva boats among the islands. The north extremity of these 13 islands* is in lat. 2° 58′ N. and their south extremity in lat. 2° 51′ N. by noon observation. Variation 6° West. exemplified by the Rochester's Journal.

Feb. 15th. From noon yesterday steered N. N. W. 3 miles, and at 2 P. M. saw to windward bearing N. N. E. an island with long ridges of rocks, tacked and stood E. S. E. 18 miles, then N. N. W. 2 miles, and at sun-rise saw 4 islands bearing W. N. W. distant about 6 leagues. At 5 P. M. one of the Maldiva boats thinking us a Moor ship, came near, sent our boat to her, and bought some rice and fish.

Feb. 16th and 17th. Steered mostly to the east and northward, with light Northerly and N. E. winds, and a southerly current of 9 or 10 miles daily.

Feb. 18th. Steered N. N. W. and North, and at noon when the observed lat. was 3° 5′ N. the island that bore N. N. E. at 2 P. M. 15th, now bore W. ½ N. distant 5 leagues.

Feb. 19th. With a light breeze at N. E. by E., steered N. by W. 16 miles, till sun-set, the island seen at noon yesterday now bore south about 5 leagues, and 5 other islands bore from W. S. W. to W. N. W. ½ N: from sun-set steered N. by E. 24 miles till 4 A. M., wind at E. by N., then tacked and steered S. E. ½ E. 4 miles, and at sun-rise had 17 islands bearing from S. W. to N. N. E. ½ E. distant about 4 leagues. Steered S. S. E. 4 miles till 8 A. M. an island bearing S. by E. about 6 leagues, tacked and steered N. by E. ½ E. 9 miles till noon, when the observed lat. was 3° 25′ N., at which time saw 13 islands more, the northernmost bearing N. ½ E. distant about 4 leagues, which will make their northern extreme in lat. 3° 37′ N., and the island that bore S. by E. at 8 A. M. will be in lat. 2° 58′ N., and the 17 islands which bore from S. W. to N. N. E. ½ E. at sun-rise, will extend from lat. 3° 10′ N. to 3° 32′ N. by noon observation, and their estimated distance.

* These islands appear to have been on the N. E. extremity of Collomandous Atoll, or, perhaps, on the S. E. part of Moluque Atoll.

Feb. 20th. Steered from noon yesterday N. N. E. 4 miles, S. E. 8½ miles, and saw at sun-set, several islands, bearing from N. by E. to S. by E. ½ E. distant from the nearest about 3 leagues. We could perceive the islands connected by shoals, as far as that which bore N. N. W.; the wind being at eastward, got ready to anchor, and sent the boat a-head to sound, the ship laying up N. E. fell into a GOOD CHANNEL, just to leeward of the northernmost island, for we could get no ground all night with the deep sea line. From sun-set steered N. N. E. 4 miles, then tacked at 8 P. M., steered S. by E. 1 mile till 9 P. M., tacked and steered N. E. 6 miles, N. N. E. ½ E. 7 miles, N. by E. 12 miles till 8 A. M., then saw 21 islands bearing from N. E. ½ E. to S. E. by E. distant about 5 leagues. From this time, steered N. ¼ W. 8 miles till noon, lat. observed 3° 52′ N., when 2 islands were seen to leeward, one bearing W. by S., and the other W. by N., the latter being the westernmost island in this latitude. A Maldiva boat came on board, on our shewing French colours, from which we got some fowls, and a few cowries. The channel through which we passed between the islands* after sun-set, appears to be in lat. about 3° 35′ N. by noon observation yesterday, and the computed run; and by this day's observation, the 2 westernmost islands seen bearing W. by S. and W. by N., one will be in lat. 3° 53′ N. and the other in lat. 3° 59′ N.

Feb. 21st. Steered N. by W. 14 miles till sun-set, the westernmost island (we call Todaw) then bore S. by E. distant 3 leagues. Gentle breezes and smooth water: since we are forced by the current to the westward of these islands, we design to stand to the northward into lat. 8° or 9° N. where we hope to get westerly winds, to carry us to the eastward. From sun-set, steered north 14 miles till 12 P. M., then N. W. by N. 12 miles, and N. by W. 7 miles till sun-rise, no land in sight.

By this abstract of the Rochester's journal, she *appears* to have crossed over part of Molucque Atoll, and also over part of Poulisdous Atoll; but it seems strange, she did not see Ari Atoll, which she must have passed near to, on the south side. The detached island seen farthest to the westward, called Todaw by the Rochester, does not correspond with any chart of the Maldivas, as there are no separate island or islands placed in the lat. she assigned to it; which shows, that the islands are very incorrectly delineated in this part.

Collomandous Atoll,

COLLOMANDOUS ATOLL, is large, of circular form, and its northern extremity is thought to be separated from Nillandous, and Molucque Atolls, by a narrow channel, probably not safe for large ships.

lately explored on the west and south sides.

This Atoll, was examined close on the west side, by H. M. S. Sir Francis Drake, on the 27th of July 1808, and found to consist of small islands covered with cocoa-nut trees, united together by necks of dry sand; these islands are all low, well wooded, and many of them inhabited. She endeavoured to pass to the eastward, between this Atoll and that of Adoumatis, in the night of the 27th of July, and ran upon the steep reef which forms the northern boundary of the latter, but fortunately the sea being smooth, she was quickly hove off the reef, by an anchor laid out in 60 fathoms water, within the distance of ½ a cable's length of the ship. When clear of the reef, she steered to the N. E.ward through the channel.

Collomandous channel.

COLLOMANDOUS CHANNEL, OR SIR FRANCIS DRAKE'S CHANNEL, is described by Lieut. Henderson, of that ship, to be perfectly free from hidden danger, about 7 or 8 miles wide, and as many leagues in length: the flood was found to set through the channel N. E., and the ebb S. W. about ¾ of a mile per hour.

Geo. site of the above named Atoll,

The N. W. extremity of Collomandous Atoll, was found by the observations of the above named officer, to be situated in lat. 2° 30′ N. lon. 73° 8′ E., and the islands which bound the north side of the channel, were found to lie, the S. Westernmost, or Long Island in lat. 2°

* Probably those on the south part of Poulisdous Atoll.

21′ N. lon. 73° 8′ E., and South Island in lat. 2° 13′ S. lon. 73° 21′ E. by chronometer. From South Island, the southern edge of the Atoll takes a direction N. E. by E. about 7 leagues to its eastern extremity; and the western entrance of the channel is in lat. 2° 10′ N. lon. 73° 21′ E., for the South Island of the Atoll may be considered as the north boundary of the entrance, which extends farther to the westward than any part of Adoumatis Atoll, the southern boundary of the channel. and of the west entrance of the channel.

This channel, seems (from the above description of this excellent observer, and intelligent officer, Lieut. Henderson) to be very safe, with a steady wind in day-light, as its true situation is now well known, but it ought not to be adopted in the night, neither should the passage through it be pursued at any time, unless in a case of necessity, because the 1½° channel, or Great Channel, a little farther to the southward, shortly to be described, is far preferable.

ADOUMATIS ATOLL, situated to the S. E.ward of Collomandous Atoll, is much smaller than the latter, being of an oblong form, extending nearly N. E. and S. W. about 9 leagues, and it is about 5 or 6 leagues in breadth east and west. The islands and reef on its northern edge, form the south boundary of the Collomandous Channel, the N. W. island being situated in lat. 2° 7′ N. lon. 73° 35′ E. and the N. E. island in lat. 2° 9′ N. lon. 73° 46′ E. by Lieut. Henderson's observations and chronometer. The islands which border this Atoll appear to be all of small size, and crowned with cocoa-nut trees, like those of the other Atolls. Adoumatis Atoll. Geo. site.

ADOUMATIS CHANNEL, OR ONE AND A HALF DEGREE CHANNEL,* bounded on the north by Adoumatis Atoll, and by Suadiva Atoll on the south side, is 17 leagues wide, and perfectly free from danger; being the safest, and most spacious of any of the channels which separate the Maldiva Atolls. This channel, is said to have been frequented by French and Danish navigators, in their voyages between the Island Mauritius and Tranquebar; but it seems hitherto, to have been little known to English navigators, although one or two of the commanders of the Company's Ships, appear to have been acquainted with it, as will be seen from the following extracts. Adoumatis Channel, is wide and very safe.

Devonshire, Capt. W. Mercer, from England bound to Madras, left Johanna on the 21st of September 1766, and after getting into lat. 1° 30′ N., meridian dist. 19° 35′ E. of Comoro, she steered to the eastward, and appears to have passed through the Adoumatis Channel on the 15th or 16th of October, without seeing any of the islands; but 2 Dutch ships were seen steering to the northward on the 16th. In the Journal of Mr. Peter Fea, 2d officer, is the following remark. "Steered to the eastward, to pass through among the Maldiva Islands, there being a channel that extends from lat. 1° 24′ N. to 2° N." From this channel, with Westerly and N. W. winds, the Devonshire steered eastward, keeping between the parallels of lat. 1° 30′ N. and 2° N. till the 2d of November; 2 days afterward, she saw Hog Island and the Cocos, and arrived at Madras on the 23d of that month. Devonshire passed through it in 1766.

Earl Cornwallis, Capt. Burnet Abercrombie, bound to Madras, passed in sight of the Island Bourbon, about 10 leagues to the eastward, on the 1st of September 1784, steered from thence N. N. E.ward, with the winds mostly between E. S. E. and E. by N., and passed to the eastward of the Island Agalega, and the Seychelle Islands, without seeing any of them. Knowing that the Devonshire had passed through the Adoumatis Channel, Capt. Abercrombie resolved to pursue the same route, and the wind veered to the West and W. N. W. on the 23d of September, when in lat. 1° 50′ N. lon. 68½° East by chronometer and lunar observations. From hence, with westerly winds, they steered eastward, keeping in Earl Cornwallis, &c.

* La Val describes this channel to be very wide, and that the Maldiva boats were always obliged to use a compass in crossing it, which they had no occasion for, in crossing over any of the other channels; but he states this Great Channel (erroneously) to lie directly under the equator, instead of in 1½ degree of north latitude, its real situation.

Passed through it in 1784,

lat. 1° 30′ N., and passed through the channel on the 27th of September, being at 6 P. M. in lat. 1° 28′ N. lon. 73° 35′ E. by chronometer, corresponding with observations of ☉ ☽ taken 3 days previously, and none of the islands were seen in passing.

and got speedily to Madras.

With steady winds mostly between W. S. W. and W. N. W., she steered from the Adoumatis Channel N. N. Eastward direct for Ceylon, passed the Great Basses on the 2d of October, coasted along the east side of Ceylon, and with a continuance of westerly winds, she arrived on the 8th at Madras, or 11 days after passing through the Adoumatis Channel. The Devonshire, was 19 days later in the season, when she passed through the channel, and by steering over to the east side of the bay until Hog Island was approached, her passage was thereby prolonged to 37 days from the Adoumatis Channel till her arrival at Madras.

Thetis,

Thetis, Captain William Richardson, carried French prisoners from Calcutta to the Island Mauritius, where he was informed that the vessels which trade from thence to Tranquebar, frequented a safe channel between the Maldiva Islands in lat. 1° 30′ N.; and on his returning passage, meeting with N. W. winds in lat. 1° 49′ N., he resolved to proceed through it. Having steered E. S. Eastward from the above lat. and afterward E. by S. ½ S., on the 1st of September, 1805, at sun-rise saw from the mast-head a group of small islands bearing from N. N. E. to E. N. E.; steered E. S. E. 16 miles to 9 A. M. part of the islands then in sight from the deck, bearing from N. by E. to N. by W. ½ W., the largest *apparently*, bearing north distant 4 or 5 leagues. At this time the ship was in lat. 1° 36′ N. by noon observation, taken 3 hours after, lon. 73° 33′ E. by chronometer, measured from lunar observations, taken daily during the 3 preceding days, corresponding exactly with the mean of chronometers, and several observations of ☉ ☾ taken at 3 P. M. on the 2d of September, shortly after passing the islands. These islands appeared small and low, situated near each other, and the *trees only* were discernible. From 9 A. M. the Thetis steered E. by S. 9 miles till noon, lat. then observed 1° 34′ N., and no other islands were seen afterward.

passed through the Adoumatis Channel in 1805, and got good observations.

These islands, seen by Captain Richardson, are on the south extremity of Adoumatis Atoll, and form the northern boundary of the Adoumatis Channel, or 1½° Channel, and as he is known to be an *attentive* and *correct* observer, their situations are probably ascertained near the truth, viz.

Geo. site of Islands bounding the north side of the channel.

| | Lat. | Lon. | |
|---|---|---|---|
| S. W. extremity of Adoumatis Atoll | 1° 50′ N. | 73° 27′ E. | By lunar observations and chronometers agreeing. |
| Southernmost Island | 1 49 | 73 33 | |
| Another Island | 1 51 | 73 38 | |

Lieutenant J. Henderson of the Sir Francis Drake, states that the southern limit of this Atoll, appeared to extend from lon. 73° 30′ to 73° 45′ E.

Seaflower passed through it in 1806.

H. M. S. Seaflower, Captain W. Owen, passed through this channel in September, 1806, close along the islands which form its southern boundary, and ascertained their situations as follows.

Geo. site of Islands bounding the south side of the channel, or Suadiva North Group.

| | Lat. | Lon. | |
|---|---|---|---|
| S. W. Island of north group, Suadiva Atoll | 0° 48′ N | 73° 19′ E. | By lunar observations. |
| N. W. Island of ditto | 0 51 | 73 20½ | |
| N. Easternmost Island seen | 0 58 | 73 33 | |

This channel is very safe, and preferable to the northern channels.

As the foregoing channel, contains a clear space from lat. 0° 58′ N. to lat. 1° 49′ N. being 51 miles wide on a meridian line, it may be considered very safe, and preferable to any of the northern channels, which are at present not so well known. Ships coming from the S. W. toward Ceylon or the Coromandel Coast in the S. W. monsoon, or from March to November, ought certainly to prefer this channel to the circuitous route by the Eight or Nine Degrees' Channel, which is equally safe, with the probable advantage of having a smoother sea,

and more favorable weather, than is frequently experienced in those channels to the north of the Maldivas.

Ships running to the eastward in November, December, and January, may also proceed through the Adoumatis Channel, or through the Equatorial Channel, or to the southward of all the islands, as prevailing circumstances render expedient, where variable winds mostly from the westward, with an easterly current, may generally be expected in these months near the equator; for N. W. and Westerly winds prevail greatly in the Adoumatis Channel throughout the whole year. The parallel of 1° 30′ to 1° 36′ N. seems to be a good track to pass through this channel to the Eastward, when the wind is N. Westerly; but with a southerly wind, a ship ought to borrow toward the Suadiva Isles, on the south side of the channel.

Winchelsea and fleet, passed through the Adoumatis Channel in 1814.

The following extract of a letter from Captain William Moffat, of the Winchelsea, will shew his favorable opinion of this channel.

Capt. Moffat's remarks relative to it.

Proceeding from Johanna, with the ships* under my direction bound to Madras, I resolved to pass through the Adoumatis Channel, (knowing your favorable opinion of it) which we accomplished very safely on the 27th of June, 1814. The weather being thick, with incessant rain, prevented our seeing the land, and consequently of the means of affording you any satisfactory remarks. On the 27th of June, at 2 P. M. we hove to, in order to keep the fleet together, judging ourselves then in a fair track, and very near the islands; and probably in the night, by the current running to the eastward, we had been drifted well into the channel, which is corroborated by a Maldiva boat having passed near to the Astell and Asia.

I believe this channel to be perfectly safe, and notwithstanding the unfavorable circumstances under which we passed through, I am of opinion it is far preferable to the circuitous route by the Eight or Nine Degrees' Channel, and that there is a great probability of meeting with smoother water, and fine weather, by adopting it.

This may be inferred, from what I experienced in the Phœnix, when bound from Bombay to the Red Sea, with a disabled ship in company, circumstances having brought me very near this channel about the latter end of June, 1801. We came down outside of the Laccadiva and Maldiva Islands, and had very bad weather at times, which gradually improved as we drew to the southward, and became very fine with a smooth sea, when we were near the southern Atolls.

The Adoumatis, or One and a Half Degree Channel, I have no doubt will (when better known) be generally adopted by navigators.

Albemarle passed through it in 1707.

It has been already mentioned under the head *Nillandous Atoll*, that the Albemarle in November, 1707, was drifted by the current through the Adoumatis Channel to the eastward, which circumstance remained enveloped from the knowledge of the Commander and officers of this ship.

Suadiva Atoll,

SUADIVA ATOLL, extending about N. N. E. and S. S. W. 16 or 17 leagues, of an oval form, with its greatest breadth to the southward, on the south and east sides, seems to be formed by a chain of small islands, fronted by a coral reef to seaward; but on the western side, the chain of islands is broken by a narrow isthmus of sand, seen a little above water, extending about 4 or 5 leagues in a S. S. W. and N. N. Easterly direction. Captain W. Owen, in H. M. S. Seaflower, while tracing the west side of this Atoll in September, 1806, endeavoured to pass through this *apparent* opening, but when within 3 miles of it, the low neck of sand was discerned, which seems to separate the Suadiva Atoll into *two groups*, or *divisions* on the western side.

has a low sand bank on the western side, seen by Capt. Owen.

From the S. W. island of the north group, as stated above to be in lat. 0° 48′ N., this neck of sand extended to the north island of the southern group, in lat. 0° 34′ N., in which there appeared only one very small opening, close to the former island.

* Winchelsea, Castle Huntley, Marquis of Huntley, Asia, Astell, and Europe.

Geo. site of western side by Snow Fancy.

Snow Fancy, on the 26th of April, 1794, at noon observed in lat. 0° 44′ N., when 8 islands on the west side of Suadiva Atoll, bore from E. by N. to E. by S. ½ S. distant about 5½ leagues, which made the westernmost island in lat. 0° 43′ N. lon. about 73° 10′ E. by account, from an observation of ☉ ☾ taken on the preceding day.

These islands, by the Fancy's observations, are placed in the lat. where Captain Owen discovered the low neck of sand, destitute of islands; and as he is an officer of great ability as a marine surveyor, his observations are probably more correct than those taken in the Fancy.

Captain Owen, in H. M. S. Baracouta, with several transports under his direction, passed to the eastward, close along the southern verge of this Atoll, 24th November, 1811; and his observations by moon and chronometer, give the following limits of the Suadiva Atoll to the south and westward.

Geo. site of the west, south, and eastern sides, by Capt. Owen, and others.

Southern group, northernmost island, lat. 0° 34′ N. lon. 73° 8′ E. N. W. island in lat. 0° 28′ N. lon. 73° 2′ E. S. W. island lat. 0° 18′ N. lon. 73° 4′ E. South island lat. 0° 11′ N. lon. 73° 12′ E. South extremity of the reef, lat. 0° 9′ N. lon. 73° 15′ E. The N. Easternmost island seen, lat. 0° 28′ N. lon. 73° 38′ E. The Fancy made the S. W. extremity of this Atoll in lat. 0° 11′ N. lon. 73° 0′ E. The Southampton, in 1782, made it in lat. 0° 12′ N. lon. 73° 12′ E. by ✱ ☾ ✱. Monsieur Bonvouloir, in 1795, made the south extreme of the Atoll in lat. 0° 13′ N. and coasted along within 1½ and 2 miles of the numerous rocks and islands which forms it south and its eastern side, to the N. E. extremity, which he made in lat. 0° 52′ N. The Albemarle, in 1707, made the same part in lat. 0° 51′ N. and the Europe made it in lat. 0° 51½′ N. lon. 73° 30′ E. by account from Bombay, having fallen in with the N. E. part of the Atoll bearing from W. ½ N. to S. W. ½ W. distant 3 leagues, but the true lon. of the eastern extremity of this Atoll, although not positively ascertained, appears to be about 73° 40′ E.

Suadiva, or Equatorial Channel.

SUADIVA, SOUADOU, OR EQUATORIAL CHANNEL, formed on the north side by the southern extremity of the Suadiva Atoll, described above, and on the south side by the Island Addon, is about 10 leagues wide and clear of danger, the south extremity of

Safe for ships

the above Atoll being in lat. 0° 9′ or 0° 10′ N., and bears about N. N. W. from Addon Island, the north part of which island is in lat. 0° 19′ S.

Contractor passed through it.

Contractor, from England, bound to Madras, passed through this channel on the 28th of July, 1792, having first passed between Pona Molubque Atoll, and Addon Island; she had the wind at S. E. with a lee current, and not being able to weather the latter island, she passed to leeward of it with the boat ahead, then hauled to the eastward, and did not see the southern part of Suadiva Atoll.

and the Fatty Rair.

Monsieur Bonvouloir, in the ship Fatty Rair, passed to the eastward through this channel on the 27th of May, 1795, with westerly winds: he first saw Pona Molubque Atoll bearing to the S. E., which together with Addon, he passed at 4 or 5 leagues distance to the westward, then steered to the northward till he approached the south part of Suadiva Atoll, which he coasted round to its N. E. extremity as mentioned above.

Also the Baracouta and other ships.

H. M. S. Baracouta, Captain W. Owen, in charge of several transports from Java, carried them to the eastward through this channel, on the 24th of November, 1811, and had strong westerly winds with easterly currents in passing through it, and several days previously.

Winds.

Westerly winds prevail greatly here, except in part of June, July, and August, when the S. E. trade wind blows sometimes close up to the equator, the route through the One and a Half Degree Channel should be preferred, by ships bound to the eastward, in order to avoid the verge of the S. E. trade wind. But at mostly all other times, it appears that a passage to the eastward may be affected with facility through the Equatorial Channel, as several ships have lately sailed through it, and found it very safe.

With the wind inclining from the northward, a ship intending to proceed to the eastward through this channel, ought to keep nearly on the equator, or rather toward the northern side; but with a southerly wind, it will be proper to give a wide birth to the south part of Suadiva Atoll, by keeping in lat. about 0° 12′ S. to 0° 16′ S. and pass near to the north end of the island Addon. Sailing directions.

ADDON ISLAND, situated by itself, and bounding the south side of the Equatorial Channel, is like many of the other islands, inhabited, and covered with trees. The north extremity of this island is in lat. 0° 19′ S. from whence it extends about 2 leagues to the southward, including the coral reef with high breakers, which projects about 2½ miles in a S. S. E. direction from the south end of the island. This reef ought not to be approached close, as the rocks on its edge, slope out under water in some places to a considerable distance beyond the breakers; but on the other sides of the island, the shore appears to be steep to, with no soundings near it. Addon Island

As many ships have seen this island within these few years, since the Equatorial Channel, and the south channel of the Maldivas, became better known to Europeans than formerly, its situation seems to be ascertained very near the truth, the body of it being in lat. 0° 21′ S. lon. 73° 35′ E. by mean of the chronometers and lunar observations of 6 ships, taken at different times, but corresponding with each other within a few miles. Geo. site.

In coming from the southward, this island appears in separate hummocks when first seen, but are soon perceived to join, when it is approached.

ADDON CHANNEL, OR SOUTH CHANNEL, is formed by the Island Addon to the N. E., and to the S. W. by Pona Molubque Atoll, from the N. Eastern extremity of which, Addon Island bears N. E. distant about 6½ leagues; the channel between them is about this breadth, clear of danger, if a birth be given to the reef that projects from the south end of the island. Addon Channel; clear of danger.

Several ships bound to the eastward, have passed through this channel of late years, among which was the Company's ship Contractor, on the 28th of July, 1792; by her journal, I first discovered the geographical situation of the islands which form it, and that it was safe for ships.

The Contractor, from England, bound to Madras, passed to the westward of Diego Garcia on the 22d of July, 1792, but thought themselves to the eastward of that island, until at 7 A. M. 5 islands were seen to the N. N. E., and at noon another island was discerned bearing east, then in lat. 6° 26′ S., and shortly after, others were seen to the N. Eastward. These were the Chagos Islands, all of which they passed on the west side, with the wind variable in squalls between East and N. E., and showers of rain. Contractor in 1792, passed on the west side of Chagos Islands.

From this time, the winds kept veering between N. E. and S. E., in generally light breezes, until the 27th, at day-light, when the south Atoll of the Maldivas (Pona Molubque) was discerned bearing from W. 15° S. to W. 35° S., consisting of 10 or 12 considerable islands, and several smaller ones, covered with cocoa-nut trees, and all lined with a white sandy beach, besides innumerable rocks amongst them, the northernmost part then distant 3 or 3½ leagues. Directly after, a long low Island (Addon) was seen from the mast-head, bearing N. 35° E. distant about 5 leagues: steered close hauled, about N. N. E. ½ E. 10 miles till 8 A. M., with the wind easterly in squalls, extremes of the south Atoll then bore from S. 45° W. to S. 65° W., nearly out of sight, and Addon Island bore from North to N. 15° E., distant about 6 or 7 miles. From this station, it appeared nearly level, but its southern part seemed as if divided into 3 smaller islands, which on a nearer view, was found to be a continuation of the same island, about 2 or 3 leagues in extent, and a reef with high breakers projects from its southern extreme about 2½ miles. Afterward saw the south Atoll of the Maldivas, and Addon Island.

From 8 A. M. steered N. E. by N., but the current running to W. N. W., we could not weather the reef, tacked, and steered S. by E. 6 miles till noon, when the observed lat. was 0° 31′ S. lon. 73° 30′ E. by ⊙ ☾ measured by chronometer from the preceding day, the South Atoll bearing from S. W. ½ S. to S. W. ½ W. distant 7 or 8 miles, and Addon Island from N. E. by N. to N. E. ½ E.

Observations

July 28th, stood to the southward 3 miles, then tacked, and stood to the N. E. 20 miles till 6 P. M. to endeavour to weather Addon Island, bearing from N. N. E. to N. by W. ½ W., off shore 2 or 3 miles, and nearly abreast of the reef, when perceiving the white coral rocks under the ship, tacked, and had only 6 fathoms water in stays. This steep coral spit has no soundings close to, and seems to be a continuation of Addon Reef.

Addon Reef.

During the night, kept working between the south Atoll and Addon, making each alternately, expecting in the morning to be able to weather the latter, which the W. N. W. current rendered impracticable. Not knowing there was a safe passage on the N. W. side of Addon, and finding we could not weather it, at 8 A. M. when within 2 miles of it, bearing from N. by E. to N. N. W., sent the boat a-head, following her along the west side of the island, and were agreeably surprised to find a clear sea to the northward and westward. Several of the natives were seen, and no ground was got from 30 to 60 fathoms of line, in passing along the West and N. W. parts of the island at 2 miles distance. At 11 A. M. Addon bore from South to S. S. E. distant 3 miles, steered E. N. E. 5½ miles to noon, lat. then observed 0° 14′ S.

Passed on the West and N. W. sides of Addon.

July 29th, at 1 P. M. the Island Addon bore from S. S. W. to S. W. ¼ S., distant 12 or 13 miles, steered from hence E. N. E. 14 miles close hauled, with the wind at S. E. and at 4 P. M. by observations of ⊙ ☾ made lon. 73° 40′ E. Experienced a current of 21 miles to the north, and 15 miles to the westward during the following 24 hours.

Observations

Fancy passed down on the west side of the Maldivas in 1795, saw several of the Islands, and went through the South Channel.

Fancy Snow, from Bombay, bound to Port Jackson, fell in with the islands on the west side of Ari Atoll, on the 25th of April, 1795; on the 29th, she saw the islands on the western part of Suadiva Atoll; on the 30th, saw Addon Island, and Pona Molubque Atoll, and with N. W. winds made several tacks, but the current setting to the eastward, she was driven into the South Channel, which she passed through, on the 1st of May. The lat. observed this day at noon, was 0° 16′ S. by one quadrant, and 0° 20′ S. by another, when Addon Island bore from E. 9° N. to E. 14° S. distant 5 miles.

The William Pitt, and Duncan, lately passed through this channel, as will be seen under the following description of the South Atoll.

Pona Molubque Atoll.

PONA MOLUBQUE ATOLL, OR SOUTHERNMOST GROUP of the Maldivas, which terminates this remarkable chain of coral banks, and half drowned islands, consists of 14 small islands, and rocks, forming a bay in the shape of a horse-shoe, open to the N. N. W., which although barred by a reef, gives the Atoll the appearance of 2 separate groups when first viewed from the westward. This Atoll is well inhabited, and the islands being covered with tall cocoa-nut trees, are discerned at 5 or 5½ leagues distance; none of the reefs appear to project out above 1½ or 2 miles, and they are thought to be very steep, without soundings, until close upon them. As this Atoll has been seen by many ships, at different times, its situation seems well ascertained, which by the mean of their chronometers, and lunar observations, the N. W. extreme of the Atoll is in lat. 0° 34′ S. lon. 73° 12′ E., the N. E. extreme in lat. 0° 33′ S. lon. 73° 25′ E. Southern extreme in lat. 0° 41′ S. lon. 73° 20′ E.

Geo. site.

Southampton, left Bombay on the 6th December, 1782, bound to Calcutta, and passed to the west of the Laccadiva and Maldiva Islands, keeping a good look out, and the lead constantly going in the night. On the 26th, at day-light, some of the islands on the S. W. part of Suadiva Atoll were seen bearing from N. E. ¼ N. to E. by N. ½ N. distant 3 or 4 leagues.

December 27th, steered to the southward with W. S. W. winds and a S. Easterly current, and at sun-set, the N. E. islands of the south Atoll bore E. S. E. 3 or 4 leagues, and its western extreme S. ¾ W. distant about 2 leagues, with the white sand of the beach in sight. There was no appearance of foul ground or dangers, excepting a reef projecting a little from the S. W. extremity of the Atoll: these islands, appeared to be elevated about 20 feet above the sea, exclusive of the height of trees. When we rounded the southernmost island, steered E. S. E. and East, and experienced a current of 19 miles to the south, and 35 miles to the eastward, during the 24 hours. Southampton passed round on the west and south side of it in 1762.

Le Bien-Venue, commanded by Monsieur Roncais Violette, steering to the eastward with westerly winds near the equator, on the 7th of April, 1773, descried the southernmost Atoll of the Maldivas, the islands of which were found to be low and woody, and the inhabitants came on board; she ranged along the southernmost island, then steered to the N. E., and on the 20th of April, reached the Island Ceylon. Le Bien-Venue, also passed on the same side in 1773.

In the following extracts, from the journals of the ships William Pitt, and Duncan, a circumstantial description of Pona Molubque Atoll will be found, as both these ships passed through the South Channel, between the Island Addon and the south Atoll, and sailed close to the north side of the latter.

William Pitt, Captain Graham, from England, bound to Colombo, passed to the eastward of the Island Roderigue, and between the Chagos, and Seychelle Archipelagos. William Pitt,

Having reached lat. 2½° N. lon. 69° E., on the 7th of October, 1813, with the wind at West and W. N. W., squally weather, and a lee current, it was thought unsafe to pursue any longer the route toward the Eight Degrees' Channel, in case of not being able to clear the northern Atolls, therefore, bore away to the S. E., in order to pass round to the southward of all the islands. October 9th, steering under reduced sail, keeping a good look out for the islands, fearing they might not be correctly placed in the charts, at 3 A. M. discovered land about S. E. by E.; wore immediately, and stood off on the larboard tack with the wind at west. At ½ past 6 A. M. extremes of the south Atoll from S. ¼ E. to S. W. ¼ W.; the surf apparently breaking on white coral reefs projecting about a mile off shore. At 7 A. M. saw the Island Addon from the mast-head bearing from N. N. E. ½ E. to N. E. ¾ E., the south Atoll from S. ¼ E. to W. N. W. distant from the shore about 4 miles: hove to, and sounded with 107 fathoms line, but got no ground. While laying to, perceived the ship drift rapidly to the eastward by the current. At 8 A. M. extremes of the south Atoll from S. W. by S. to W. by S. ¾ S., distant about 5 miles. passed on the North side of it in 1813, through the South Channel.

At 11 A. M. the northern extreme of the Atoll bore west distant about 4 leagues, the Island Addon in sight from the mast-head bearing from N. ¼ E. to N. ¾ W. distant 16 or 17 miles. At noon lost sight of the land, when the observed lat. was 0° 35′ S. which may be considered as very near the true lat. of the northern point of Pona Molubque Atoll, and the chronometer makes the same point in lon. 73° 17′ E. measured back from Colombo Flagstaff, allowing the latter in lon. 80° 0′ E. In passing through this channel, we have seen no appearance of danger, and we kept the north point of the Atoll bearing west, until the lat. was observed at noon.

Pona Molubque Atoll, seems chained together by reefs, and it is of considerable extent, rendered dangerous by the strong currents, or a kind of tides, which appear sometimes to run both east and west. When we bore away to the eastward, the low land was seen from the mast-head, extending south as far as the eye could discern, and the eastern side of the islands appeared to lie about N. N. E. and S. S. W.; while we lay to, a number of natives were seen on the beach, apparently fishing. We lay to, with the view of examining these islands as closely as seemed prudent, and should have sent a boat ashore, had not the surf rendered any attempt fruitless. Description.

Although the channel between the Island Addon and Pona Molubque Atoll, cannot be less than 6 or 7 leagues wide, I strongly advise navigators to be extremely guarded when

Strong currents.

coming near these islands; because we were set 54 miles to the eastward in 20 hours by the current, when running at the rate of 7 or 8 miles per log with fresh westerly winds.

Duncan, fell in with this Atoll,

Ship Duncan, Capt. Miller, from the Island Mauritius bound to Bengal, steering S. E. with the wind at S. S. W., on the 22d of November, 1813, at 11 A. M. saw from the deck, land moderately low, and woody, chiefly cocoa-nut trees. At noon lat. observed 0° 31′ S. Pona Molubque Atoll bearing from E. 16° S. to E. 40° S.; hauled up in order to pass to the southward of it, but being unable to do so, bore away east.

Nov. 23d. Fresh breezes at S. by W. with clear weather, steering toward the N. W. point of the Atoll, at 1 h. 20 m. P. M. saw another range of islands beyond the nearest, bearing E. ½ S.

and passed close along its northern side, through the South Channel in 1813.

At 1 h. 40 m. the N. W. extreme of the islands bore south, distant 2 miles; steering from this time east, at the rate of 6½ miles per hour till 3 P. M. when their N. E. extremity bore south, distant 2 miles. Hove to, and sounded, no ground at 70 fathoms. At 3½ P. M. saw from the mast-head Addon Island bearing N. by E., distant 17 miles, allowing for the height of the mast, and the trees on the island to be elevated 50 feet above the sea; same time, the nearest part of the South Atoll bore W. ½ N. distant 3 miles. At 5½ P. M. lost sight of the South Atoll.

Description.

The islands of this Atoll are low, probably about 20 feet of elevation above the sea, covered chiefly with cocoa-nut trees, and may be seen from the deck of a ship 11 miles. They form like a horse shoe, open to the N. N. W., and I think, are connected together by a reef or bank, dry in most places, with the sea breaking over it; and within it, the water was much discoloured.

The two extremities are united by a narrow bar of sand, over which the sea broke furiously; some places are covered with bushes, and its N. E. end forms an island, having on it some cocoa-nut trees, and behind it were several boats: on the beach of the N. E. point of the principal range of islands, saw several inhabitants and a few huts. Outside of the S. W. range, the beach was very white, apparently steep to, in most places; but farther to the southward, the sea broke 1 mile out, and it was impossible to land in a boat, except to the eastward of the N. E. point.

Although this South Channel is an excellent one, it ought probably not to be adopted, unless with a steady breeze of wind, as there are strong ripplings, and I am convinced there is no anchorage at a cable's length from the surf.

Geo. site.

The north part of Pona Molubque Atoll, I make in lat. 0° 32′ S. lon. 73° 21′ E. by lunar observations and chronometer, and the southern part in lat. 0° 39′ S.

Currents and winds near the Maldivas.

CURRENTS, in the vicinity of the Maldiva Chain, set more easterly than in any other direction, although among the Atolls, there seem to be tides, alternately running to the east and west, when the weather is settled with gentle winds. The currents also vary, from local causes, for when the westerly monsoon prevails in full force among the Northern Atolls, in June, July, and August, the current runs to the eastward with the wind; whilst at the same time, more particularly late in June, July, and part of August, when the S. E. trade approaches the equator, the current then often sets to the W. N. W.ward at the southern part of the Chain, in the vicinity of the Equatorial Channel, and the South Atoll.

In March and April, the current generally sets to the westward on the east side of the Northern Atolls, and to the E. N. E.ward about the South Atoll, from the equator to lat. 4° or 5° S., and it extends far to the east and west of the meridian of the islands. This current, is sometimes strong, from 50 to 65 miles in 24 hours, at other times it is weak, and fluctuating. In these months, from the equator to lat. 8° or 9° N. the current sets mostly to the S. Westward.

In May, the current sets strong to the eastward near the equator, sometimes from 50 to

70 miles in 24 hours, in the track near the Southern Atolls, from lat. 2° N. to 2° S. The winds in this space, are then variable, also in April, but mostly from the westward.

In the latter end of June, and in July, when the S. E. trade wind blows close to the equator, the current sets often to W. N. W.ward about the south end of the Maldivas, (as mentioned above) particularly to the south of the equator.

Currents between Ceylon and the Maldivas.

In October, November, December, and January, the current runs mostly to the eastward through the Equatorial Channel, and about the South Atoll; but in these months, it often runs strong to the westward between lat. 5° N. and 3° N. in the track between Ceylon and the Maldivas; frequently from 30 to 55 miles in 24 hours, in November and December, on the meridian of Point de Galle, decreasing in velocity as the equator is approached. In these months, the winds are generally variable and light, with frequent calms, throughout the direct track between the Maldiva Islands and Java Head.

Caution necessary in approaching these Islands.

Although the geographical positions of the channels which divide the Northern Atolls, described above, ought not to be relied on, as perfectly ascertained, from a deficiency of correct observations; yet, the limits given for the *One and a Half Degree Channel*, the *Equatorial Channel*, and the *South Channel*, may be considered a near approximation to the truth: nevertheless, large ships ought always to approach any part of these islands with great caution, on account of strong currents, often uncertain in their direction, although generally setting to the east or westward between the Atolls, in the principal channels.

The foregoing description of the Maldiva Islands, however imperfect, has engrossed much of my time, in searching out and collating the materials of which it is composed; and as this extensive chain of islands, has long been thought an impenetrable barrier to ships coming from the S. W. toward the Island Ceylon, or the southern parts of Hindoostan, my endeavour to restore such information as may be useful, relative to these islands and their navigable channels, which has hitherto been enveloped in obscurity from the knowledge of Europeans, I trust, therefore, cannot but be acceptable to all persons who frequent the navigation of the Oriental seas.

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## *TO SAIL between CAPE COMORIN & POINT de GALLE. COAST of MADURA, and GULF of MANAR.*

To pass from Cape Comorin to Point de Galle;

POINT DE GALLE, bears from Cape Comorin S. 53° E. *true bearing*, distant 66 leagues. Ships crossing from the cape in the S. W. monsoon, ought not to steer a direct course, as they may be liable to experience *at times*, a current setting to the eastward into the Gulf of Manar; a S. E. or S. E. ½ S. course, will therefore be proper, according to circumstances, until they get nearly in the latitude of Point de Galle; they may then steer to the eastward and make it in day-light, if bound to the Bay of Bengal or the Coromandel Coast, but it will be prudent to approach the coast about Point de Galle with great caution during the night, on account of sunken rocks interspersed at a considerable distance from the shore. Ships bound to the eastern parts of India, have no occasion to keep close to the south coast of Ceylon, at least, not to lose time by so doing.

The current sets into the Gulf of Manar, only at times during the S. W. monsoon, for it generally runs about S. S. E. or South in this track, but it would be imprudent to fall in with the island of Ceylon to the westward of Point de Galle, for if the wind veer to the southward, it would be difficult to get round that place, which has been already noticed, under the section, of sailing from Bombay to the south part of Ceylon in the S. W. monsoon.

During the N. E. monsoon, a direct course may be followed from Cape Comorin to Point de Galle, the wind blowing then from the gulf, is generally more fair for ships passing from the former to the latter, than in returning toward the cape; for in this season, ships keep near the west coast of Ceylon to Caliture or Colombo, before they stretch across for Cape Comorin.

and from the latter to the former.

In December and January, when the N. E. monsoon blows strong out of the Gulf of Manar, it is certainly advisable for ships proceeding from the south part of Ceylon to the Malabar Coast, not to stretch off until they have coasted along to Caliture; then, they may steer over for the cape close hauled, and will find the N. Easterly wind increase greatly in strength as the gulf is opened. As they approach the land about the cape, it will draw more to the eastward, and afterwards become variable, inclining to land and sea breezes when near the land to the westward of the Cape Mountains.

About the changes of the monsoons, the winds often prevail from the westward between Cape Comorin and Ceylon, accompanied *at times* by a current setting into the gulf, which render it advisable for ships passing from the south part of the island toward the cape, in October, November, March and April, to steer direct from Point de Galle for it. In the two former months, some ships have been set to the eastward by the current and W. S. W. winds, so far as to fall in with the Coast of Madura, near Manapar Point; in crossing from Caliture late in March, 1801, the same happened to us in the Anna, noticed in the description of the coast near Cape Comorin.

How to proceed from Ceylon late in April.

From March to November, westerly winds prevail greatly off the S. W. end of Ceylon, it is then difficult for a ship to get to the westward from Point de Galle, and after April it is too late to proceed from thence to the ports on the Malabar Coast, until October is advancing.

Even in April, being off the South or S. W. part of Ceylon, bound to Bombay, if a ship can make considerable progress against the westerly winds, it will be prudent for her to pass through the Eight or Nine Degrees Channel, and to the westward of the Laccadiva Islands, making short tacks occasionally in passing them, to keep up her westing. She will then avoid being embarrassed by the coast, and probably escape bad weather, very liable to happen on it in May; and may reasonably expect to reach her port of destination, more speedily than by keeping near the land, in the track used during the fair season.

Tinevelly Coast, not correctly known.

MADURA, OR TINEVELLY COAST, which forms the N. W. side of the Gulf of Manar, or Manara, is little frequented, except by small vessels from the neighbouring coasts, particularly by those from Colombo and Negombo, which trade to it.

East Cape.

About 5½ leagues E. by N. from the low sandy point of the *true* Cape Comorin, there is a round projecting part of the coast, called the *East* Cape by some navigators, having on its eastern side a considerable bay, with a tuft of trees elevated more than the other land, and the appearance of an inlet or river; this place is called Covolam.

Geo. site of Manapar Point; adjacent coast described.

MANAPAR POINT, in lat. 8° 22′ N. lon. 78° 16′ E.,* or 32 miles east from Cape Comorin by my chronometers, in the Anna, bears N. E. by E. from the round point, or East Cape, distant 8 leagues; the shore between them is woody, curved a little, concave where the bay is to the westward, and a little convex to the eastward, in lat. 8° 16′ N., where there are some houses, and a single white house a little farther to the eastward. The whole of the coast is level, and covered with trees from Cape Comorin to 1 or 2 miles eastward of this white house, with mostly regular soundings, 9 or 10 fathoms, about 4 or 5 miles off shore. A little to the eastward of the white house, the shore becomes barren, and stretching about 4

* Lieut. Wedgebrough, in his survey of the Gulf of Manar, in 1795 and 1796, places Manapar Point in lat. 8° 28′ N. lon. 78° 20½′ E. Lieut. G. Lewis, made it in lat. 8° 22′ N.

miles to the E. N. E. of it, terminates in Manapar low sandy point, above mentioned. There is a high building* with a flagstaff on it, situated on Manapar Point; and when it bore N. by W. 3 leagues, then in 13 fathoms, we could perceive no more land beyond it to the eastward.

Capt. J. Edgecumbe, of H. M. S. Psyche, found the soundings irregular round Manapar Point, which has a shoal projecting about 4 or 4½ miles N. E. by N. from it; with some dangerous shoals said to lie to the eastward. When the church on Manapar Point bore N. W. by W. and Trichindore pagoda N. ½ W., the Psyche shoaled suddenly from 12 to 4½ fathoms at one cast of the lead. Capt. Edgecumbe, recommends ships working up along this coast, to keep well to the eastward of all the shoals, till in sight of the 2 shoals which lie off Tutacorin: this is more necessary off Manapar Point, as one of the Pearl Banks with 4 fathoms on it, bears E. by S. from that Point, distant 4 leagues; although there is a channel between it and the reef that projects from the Point.

From Manapar Point, the coast turns round to the N. W. and Northward, forming a semicircular bay, then projects out in another point, upon which stands Trichindore pagoda, about 3½ leagues to the N. Eastward of the former; and nearly north, about 3½ leagues farther, is situated the village and road of Punnecoil, where ships may ride well sheltered from the S. W. monsoon. Between this place and Manapar Point, the coast is generally low near the sea; having on it some churches, or other buildings, and should not be approached under 10 fathoms, on account of several rocky banks fronting the shore, at a considerable distance.

TRICHINDORE PAGODA, in lat. 8° 30′ N. situated on the point about mid-way between Manapar Point and Punnecoil, is a high cylindrical tower, which answers as a sea mark, and a little to the northward of it, lies the village Coilpatnam. Trichindore Pagoda.

PUNNECOIL, is in lat. 8° 41′ N. lon. 78° 20′ E., where water, fire-wood, sheep, hogs, poultry, and fish, may be got, but very few vegetables. The greatest danger in sailing to the anchorage, is an extensive reef that stretches from it to the southward, along the coast to Trichindore Pagoda Point, and should not be approached under 7 fathoms, particularly in a large ship: to keep clear of it, a ship ought not to come nearer than 10 fathoms till Trichindore Pagoda bears S. W. by W., then steer in W. N. W., and anchor in 6, 7, or 8 fathoms, soft bottom, with the flagstaff of Punnecoil bearing W. ½ S., distant 2½ miles from the bar, and Polanis, or Carpenter's Island, North. There is 7 fathoms close to the north point of the reef on the outside, and 4 fathoms within it, where small vessels are sheltered from easterly winds. Punnecoil. How to sail into the road.

The ship St. George, of Surat, unfortunately got into the gulf in the S. W. monsoon, and took shelter at Punnecoil. She anchored on the 23d of June, 1791, in 6½ fathoms mud, with the flagstaff west, extremes of the land from North to S. ½ W., off shore 2 miles, where she remained till the force of the S. W. monsoon abated in September.

From the anchorage, in clear weather, the Ghaut mountains are discernible, the southern part nearest Cape Comorin bearing S. 56° W., and the sharp peak over Anjenga (seen in sailing along the Malabar coast) S. 80° W.

TUTACARINE, OR TUTACORIN, in lat. 8° 50′ N. lon. 78° 22½′ E., the largest town on this part of the coast, is 3 or 3½ leagues to the northward of Punnecoil; the channel for boats or small vessels passing between them, is inside of Carpenter's Island, and the other near it, which are joined together by a reef; and the depths in it, are 2½ and 3 fathoms. Carpenter's Island is easily known by the store-houses on it resembling a fort, near which, is a tope of trees; and it seems to lie about 1½ or 2 miles from the shore. Tutacarine, and

* Said to be a church belonging to the natives, many of them being Nestorian Christians.

the coast to the eastward.

Abreast of Tutacorin, and from thence to Adam's Bridge, there are several dangerous Rocky Banks, some of them 3 or 4 leagues off shore, with small islands interspersed along the coast, rendering it unsafe for large vessels to navigate amongst them. On these banks, a pearl fishery is carried on, though *at present* not very productive; but from Tutacorin, a considerable quantity of the sea-shells, called shank, is exported. The tides on this coast are not very regular, the rise and fall is from 3 to 5 feet; high water about 2½ hours on full and change of the moon, at Tutacorin. Between this place and Point Ramen, several villages are interspersed along the coast, among which Deviapatam in lat. 9° 28¾′ N. and Tondy in lat. 9° 44¾′ N. are the chief.

Gulf of Manar, Adam's Bridge, and the land contiguous.

GULF OF MANAR, OR MANARA, formed between the Madura, or Tinevelly Coast, and the Island Ceylon, is bounded to the N. Eastward by a narrow ridge of sand and rocks, mostly dry, which is called Adam's Bridge, for it in some degree, connects that island with the continent. It extends nearly E. S. E. and W. N. W. 6 or 7 leagues, the east end joining to the Island Manar, which lies close to Ceylon, and the west end joining to the Island Ramisseram; this island is situated close to a peninsula of the continent, the extremity of which is called Point Ramen, where there is a tuft of trees. Between the Island Manar and Ceylon, there is a narrow gut, *probably* very dangerous, even for the trading vessels, as it is little frequented, and on the whole extent of Adam's Bridge, there is said not to be above 3 or 4 feet water at high tides in any part; the only channel frequented by the trading boats, being that at the western part, between Point Ramen and the Island Ramisseram. On the east end of this island, there is a fort called Tannacudia; the Pagoda is in lat. 9° 18′ N. lon. about 79° 27′ E., and the village of Pombon lies at the west point, opposite to Point Ramen on the main-land; between them, a ridge of rocks, mostly above water, stretches across, having a chasm or channel in it about 100 feet broad, near the point of the island, through which the country trading boats pass backward and forward between the coasts of Malabar and Coromandel. They are obliged to unload part of their cargoes, and receive it again after passing through this channel, the greatest depth at high water being 5 or 5½ feet, and 2 or 2½ feet at low water; but in November, December, and part of January, there is said to be several feet more water in it. The bottom is hard rock, and it continues shallow about 300 yards. The distance from the point of the island to that opposite on the main, is about 1½ mile, and the channel is called by the natives Odi-aroo, or Serpent's River, situated in lat. 9° 17′ N. lon. 79° 22′ E. The current runs 3 and 3½ miles through it to the S. Westward in February, and probably during most part of the N. E. monsoon, and it may be supposed to set in the opposite direction in the other monsoon. It is high water here, about 3 hours, on full and change of the moon, and the tide rises 4 feet. About 3 or 4 leagues outside of the island Ramisseram and Adam's Bridge, the depths are from 7 to 9 fathoms, increasing quickly in a southerly direction, toward the entrance of the gulf.

Gulf of Manar thought dangerous in the S. W. monsoon;

It seems to be the prevailing opinion at present, that if a ship were to get into the Gulf of Manar during the strength of the S. W. monsoon, she would find it impracticable to work out into the open sea until the force of the monsoon abated; and the St. George mentioned above, did not make any attempt, but took shelter in Punnecoil Road till September.

but ships often got into it formerly, and worked out again.

The Company's ships, however, often got into this gulf by mistake, about a century ago, and *seldom* found any difficulty in getting out of it again; which will be perceived by the following abstracts from a few of their journals.

King William got into it in 1700.

King William, from England, touched at the Island Mauritius, passed to the eastward of the Maldivas without seeing them, steering mostly North and N. by E. from the equator, and on the 14th of July 1700, got soundings 35 fathoms in lat. 8° 11′ N. on the west coast of Ceylon; afterward, got into 13 fathoms, and saw the low land near Negombo. From the 14th July, kept working to the southward with moderate breezes between S. S. W. and W. S. W., rounded Point de Galle on the 22d, and on the 31st arrived at Madras.

Phœnix got into it in 1701.

Phœnix, on the 12th June, 1701, made the land to the east of Cape Comorin, and thinking it the east part of Ceylon, steered along shore to the N. E.ward, till 2 Dutch ships at anchor in Punnecoil Road informed us of our mistake, and we then anchored. At 11 P. M. weighed, and stood to the W. S. W.ward with a southerly wind, which veered afterward to W. S. W., then tacked and steered southward to lat. 5° 30′ N., passed Point de Galle on the 15th June, being bound from England to Madras.

Wentworth got into it in 1702.

Wentworth, on the 30th July 1702, mistook the low land about Manapar for the Coromandel Coast, and tacked from it in 3½ fathoms. In the morning, discovering our mistake, worked with Southerly and S. W. winds, and a current setting into the gulf till the 13th of August, before we were in the lat. of Point de Galle, then bore away round Ceylon, being bound to Bengal.*

King George got into it in 1718.

King George, from England, bound to Madras, on the 14th of June 1718, got soundings 35 fathoms grey sand, at 9 P. M., tacked and lay by, till day-light, then steered N. W. by W. and N. by W., thinking we were on the east coast of Ceylon, till at 8 A. M. being in 20 fathoms, saw low land bearing N. W. distant 3 or 4 leagues; the weather being hazy, hauled off N. N. E., and at 10 A. M. saw a house on a sandy point bearing N. W. 4 leagues, which we took to be Baticolo, but it afterward proved to be Manapar Point.

June 15th. At 2 P. M. saw the high land over Cape Comorin bearing west, also a Dutch flag on a fort bearing N. W. under which lay 2 ships: steered toward the Road, and at ½ past 3 anchored in 7½ fathoms sand, with the fort bearing N. W. ½ W. distant 4 or 5 miles, (called in the journal Tutacorin, but probably it was Punnecoil,) high land over Cape Comorin bearing west. Sent a present to the governor, who furnished us with a good chart of the bay, (ours being faulty) and directions for working out, with the set of the current.†

Strong westerly winds this day, and on the 16th, rode with a cable on the best bower.

June 17th. Weighed at 11 A. M. yesterday, with the wind at west, and steered S. by W. ½ W. in soundings of 8 to 10 fathoms, keeping the low land in sight; having been advised to keep between 8 and 12 fathoms till Manapar Point was brought to bear W. N. W., which point is 25 miles to the southward of where we anchored. From this point E. by S. 4 leagues, lies a Pearl Bank with 4 fathoms water on it, which I was advised to pass on the outside, if the wind proved to the southward of west. At sun-set, having the house on Manapar Point bearing W. by S. distant 5 leagues, with the wind at W. S. W., kept away S. S. E. till 8 P. M. to avoid the Pearl Bank, which we effected, the soundings increasing gradually from 9 to 20 fathoms, then no ground with 30 fathoms line at 11 P. M. From 8 P. M. with the wind at W. by S. steered south, and at noon observed in lat. 6° 21′ N., from which time steered S. E. 56 miles, then E. S. E. and E. N. E. till sun-rise on the 18th, and saw the south-west part of Ceylon bearing from N. N. W. to S. E. distant 7 or 8 leagues: arrived on the 25th at Madras.

Derby got into it in 1720.

Derby, on the 9th July, 1720, made Manapar Point, with the church and flagstaff on it bearing N. W. by W., and at first mistook it for the east side of Ceylon, but finding our error, tacked, and stood to the southward, without having occasion to tack again; rounded the Basses on the 12th, and anchored on the 17th of July, at Madras.‡

* Had they worked along shore to Cape Comorin, they would have got sooner out of the gulf.

† In my passage, great attention was given to the variation; believing, if I were under 4° 0′ W. variation, there would be no danger of falling into Tutacorin Bay: and by the accounts received from experienced navigators, that we should see abundance of crabs and snakes in the water, if to the westward of Ceylon, and in Tutacorin Bay; I now am satisfied to be incorrect, having seen none. Only we found the water become more pale, but got no soundings till we made the land, and the observed variation was only 3° 30′ west, when at anchor in the bay.

‡ The Derby, Capt. Fitzhugh, in a preceding voyage, made a remarkable mistake in the opposite direction. Having left the Cape of Good Hope on the 28th of May, bound for Bengal, she fell in with the islands off the west coast of Sumatra on the 18th of July, in lat. 1° 23′ S. and thought them to be the Maldiva Islands, having made 5° 24′ east meridian distance from the cape. From hence, with S. W., S. E., and variable winds, she

# *WEST COAST of CEYLON, from MANAR to POINT DE GALLE,*

## WITH SAILING DIRECTIONS.

West Coast of Ceylon.

FROM the east end of the Island Manar to the Island Calpentyn, there are many dangerous banks interspersed along the west coast of Ceylon, rendering the navigation unsafe for large vessels near the shore; but small ones drawing near 7 or 8 feet water, that are acquainted, pass inside, or between some of them.

The east end of Manar is in lat. about 8° 57′ N., having on it cocoa-nut trees, some houses, and a fort; and in the gut which separates it from the opposite Point Mantotte or Mentole, on Ceylon, there is said to be 10 or 12 feet water in some places. The anchorage at Manar is on the south side of the island, in 4 or 5 fathoms, about 4 miles to the westward of the gut, or a small vessel may anchor near to Manar in 2½ or 2 fathoms. The island is low, abounding with cocoa-nut trees.

Aripo Village.

ARIPO, a village of some trade, with a church, is situated about 4 leagues to the southward of the east end of Manar, at the mouth of the river Arewiaar; small vessels passing from one to the other, keep in 2½ or 3 fathoms water, near the shore.

To sail from the southward towards Manar.

The rocky banks or reefs off this place, are very dangerous; one lies to the West and S. W. 5 or 6 miles off shore, with 4 fathoms close to it, and the outermost are said to be 5 leagues distant from the land. Ships bound to Manar from the southward, when 3 or 3½ leagues to the westward of Cardiva Island, may steer about north till the breakers on the reef are discerned, then haul to the westward about a league in rounding it. From this place, Manar Island will be seen to the N. E., for which they should steer, keeping a good look out, and the lead going, the soundings being irregular over a rocky bottom, until in 7 or 8 fathoms near the island; under these depths, they decrease gradually towards it, to 5 fathoms sandy ground.

In this track, there are sometimes overfalls from 20 or 25 fathoms, to 2 or 3 fathoms less at a cast; should a vessel shoal to 8 fathoms hard ground, in passing near the reef or outermost banks, she ought instantly to haul to the westward.

From this part of Ceylon to the Tinevelly coast, soundings extend across the gulf to the southward of Adam's Bridge, but the outer limit of the bank is not exactly known to Europeans, as seldom any other than small coasting vessels navigate in the gulf to the northward of Colombo.

Cardiva Island.

CARDIVA, OR NALLADIVE ISLAND, about 7 leagues to the southward of Aripo, is very narrow, of a crooked form, extending nearly north and south 4 or 5 leagues, and it is situated near the shore of Ceylon; between it and the main, there is a channel for boats. This island is in general low, with sandy patches in some parts, and bushes or trees in others, but there are ridges of hills moderately elevated on the main behind it: the south end of it

proceeded to the southward, in sight of the Poggy Islands, and Trieste, calling the latter Jameo, or Gama, and stating it to be the southernmost island at the south part of the Maldivas. Continuing to proceed to the southward, with the high land of Sumatra in sight at times, and Keysers Peak was seen when in lat. 6° S., she still proceeded to the south, with the view of getting round the south end of this *unknown* part of the *supposed* Maldiva Islands, when on the 2d of August in lat. 7° S. and 60° 40′ meridian distance east of the Cape of Good Hope, she fortunately spoke a ship, and were informed that the low land then in sight was Claps Island, on the south coast of Java, and not the islands near the Maldivas. Having at this time about 40 men ill with the scurvy, she proceeded to Batavia for refreshments.

is said to be in lat. 8° 26′ N. This part in clear weather, may be seen in 15 or 20 fathoms, at 4½ or 5 leagues distance from the island. The soundings to the westward, at the distance of 4 leagues, are 8 or 9 fathoms rocky bottom. The depths are very irregular under 8 or 9 fathoms, and about a league or more from the shore, there is a rocky bank with 2 or 3 fathoms on it. About 5 leagues to the N. N. Westward of this island, the S. Westernmost of the Aripo Shoals is situated.

CALPENTYN ISLAND, to the southward of Cardiva, lies near, and parallel to Ceylon, appearing as part of the principal island when viewed from the offing. It is low, abounding with cocoa-nut trees, extending from lat. 7° 56′ N. to 8° 18′ N. The fort and village of Calpentyn, stand on the north end of the island, between which and the south end of Cardiva, there is a group of small islands, with a larger one called Long Island close to the north point of Calpentyn, which seems as part of it. Close to this, vessels may anchor in 4 or 5 fathoms, or farther to the N. E., near Cardiva; but the bottom is generally rocky and foul here, also in the parts adjacent, by which they are subject to lose their anchors. The best tract in, is said to be, by keeping near the N. W. side of the island, on account of dangerous overfalls on the rocky banks a little to the northward. The bank of soundings, is thought to stretch from this island about 6 or 7 leagues to the westward. Calpentyn Island.

From the north point of Calpentyn to Chilau, the distance is about 9 leagues, and when a vessel has got an offing, the course is about S. S. W. along the west side of the island. A reef of rocks stretches along that side, nearly from the middle part beyond the southern point, where it projects near 3 miles from the shore, which makes it proper to be attentive to the lead in passing.

The bottom between Calpentyn and Chilau is mostly sand, with a little coral at times; the nearer the former is approached, the worse it becomes for anchoring.

CHILAU RIVER, AND VILLAGE, in lat. about 7° 48′ N. may be known by a sandy hill, having on it some bushes, and near it there is a round hummock. Chilau.

In coming from the northward to this place, a vessel should keep 2 miles outside the reef of rocks projecting from Calpentyn, until clear of its southern extremity, then haul in toward the Ceylon shore. Coming from the southward, she may, if bound to Chilau, steer along shore to the anchorage abreast of the river.

MARAWIL, a small village known by some topes of cocoa-nut trees, bears nearly S. by W. from Chilau, distant about 5 leagues. The coast between them may be approached by the lead, the soundings being more regular, and the depths greater than to the northward. Marawil.

CAYMEL, a small river formed between 2 points, covered with cocoa-nut trees, bears nearly S. by E. from Marawil, distant about 4 leagues. The soundings between them are regular, especially near the shore. Caymel.

NEGOMBO, in lat. about 7° 15′ N., and 2 leagues to the S. S. W. of Caymel, is a place of some trade. Description of Negombo and how to approach it.

The coast between them forms a bight, and should not be approached under 7 or 8 fathoms, then about 2 leagues off shore, until Negombo Flagstaff is brought to bear S. E. by S., by which the rocky ledge projecting from this part of the coast will be avoided, and a rock with 10 feet water on it, and 6 fathoms close to, bearing from the flagstaff, or north point of the fort N. N. W.

When bound to Negombo from the southward, the fort should be brought to bear S. E.; a ship ought then to steer direct for it, without borrowing any more to the northward, and may anchor in 5 or 6 fathoms abreast the fort. This place may be known by the point pro-

jecting a great way out, which is covered with cocoa-nut trees, and defended by a reef stretching out a small distance. The bank of soundings extends from this part of the coast 6 or 7 leagues.

Geo. site and description of Colombo.

COLOMBO, in lat. 6° 57′ N. lon. 80° 0′ E. by chronometers from Bombay, and many observations of ☉ ☾ nearly agreeing, is distant about 6 leagues S. S. Westward from Negombo. The bottom between them is mostly mud, with regular soundings, but the coast should not be approached very close on account of some rocks stretching out about 2 miles from the north point of the small river Matual. The ship Athens of Bombay, running for Colombo, struck on these rocks in the night, and beat over them with much damage; with difficulty she was warped out, through a small gap among them. In passing along, a ship should keep in 10 or 12 fathoms, and she may anchor in Colombo Road in 6½ or 7 fathoms, with the flagstaff on the fort bearing from South to S. by E., off the town 1½ or 2 miles. Small vessels may run farther in, and anchor to the eastward of the point in 2 or 2½ fathoms, near the shore, inside of the bank, that stretches from the point to the N. Eastward across the entrance of the small cove or harbour, having on it 13 and 14 feet, but there is deeper water inside.

Some rocks project from the point a little to the northward, which ought not to be approached too close.

With the flagstaff bearing E.-N. E., there is a dangerous ledge of rocks, called the Drunken Sailor, distant about a mile off shore, with 9 fathoms close to it on the outside, and 8 fathoms inside. With a strong wind, and heavy swell, the sea breaks upon it, and in coming from the southward, it is avoided by keeping in 11 or 12 fathoms until the flagstaff bears East or E. by S.

This is the principal settlement on the coast of Ceylon, the residence of the governor, and where the cinnamon plantations (or gardens) are situated, at a small distance in the country. It is one of the most healthy places in India, abounding with good water, and other refreshments for ships.

It is not safe for ships to remain in Colombo Road during the S. W. monsoon, there being no shelter, and a heavy sea rolls into it; except during the fair season, from October to April, or May.

A Dutch Indiaman, moored in the road with good anchors and cables to seaward, during the S. W. monsoon, was wrecked, and her cargo lost, by the high sea causing her to pitch deep, and strike the ground. Ships which may be detained late in the season, ought to anchor well out, while receiving the cinnamon or other cargo, that they may be enabled to put to sea in case of necessity. The Minerva, in 1803, did not arrive at Colombo till the 11th of May; she continued there, taking in cargo, and sailed for Europe on the 20th, during which time there was much rain, thunder, and lightning; the weather threatening, with a swell from S. Westward.

Adam's Peak.

The land about Colombo is low near the sea, with some hills to the S. Eastward a little way in the country. The high mountain, having on it a sharp cone, called Adam's Peak, is nearest to this part of the coast, being about ⅓ of the distance that it is from the east side of the island.* It is in lat. 6° 52½′ N. and bears E. 7° S. from Colombo, distant 12½ leagues. When the atmosphere is very clear, it may be seen about 30 leagues, but this seldom happens, dense vapours generally prevailing over the island.

Pasture, and the coast adjacent.

PANTURE, bears from Colombo about S. ⅝ E, distant 4½ leagues; it is a small river with 2 rocks on the north side of the entrance, near ½ a mile from the shore, the anchorage

* By geographers this mountain has in general, though erroneously, been placed nearly in the centre of the island. By the Aborigines of the country, it is venerated under the name of Ham-al-el, (or Ham the Sun.)

is to the southward of these, in 10 or 12 fathoms, off shore about 2 miles. About half-way between this place and Colombo, there is in a small bay called Galketin, a few houses, to the northward of which, the coast may be approached to 12 fathoms occasionally, about 2 and 3 miles off; but farther to the southward, the shore becomes more steep and rocky, making it prudent not to come under 16 or 17 fathoms towards it, these depths being from 2 to 3 miles off shore. About 2 leagues off, there is from 23 to 26 fathoms, and from 30 to 35 fathoms 4 or 5 leagues off; from whence, the depth increases suddenly on the edge of the bank, to no ground in standing to the westward.

Coast about Caliture.

CALITURE, in lat. about 6° 36′ N., bears S. by E. from Panture, distant about 3 leagues; the coast between them fronting the sea, is mostly low and woody, and should not be approached under 15 or 16 fathoms in large ships. This place may be easily known in passing along, by a small fort close to the sea, where the land is a little elevated. Ships should not come under 10 or 12 fathoms, on account of foul ground both to the northward and southward of the fort, except they intend to anchor in the road. The mark to steer in with, is, to keep the fort between 2 hummocks, which are near each other, and not far from the shore; the northernmost is the lowest; with this mark, a ship may run in, and anchor in 5½ or 6 fathoms tolerable ground, but it is rocky out in 15 or 16 fathoms.

About S. W. ½ S. from the fort, there is a rock, having on it 12 or 13 feet water; small vessels can pass between it and the shore, in 4 fathoms, but large ships ought not to come nearer it than 10 or 11 fathoms, for it is said to lie about 2 miles off shore.

Berberyn Island.

BERBERYN ISLAND, in lat. 6° 28′ N., bears about S. by E. ½ E. from Caliture, distant 8 miles; being small, and close to the coast, it is not easily perceived, except when passing near. There is said to be anchorage to the northward of it, in 6 or 7 fathoms, and a small bay farther in, with 2 or 3 fathoms sand, where small craft may anchor; but large ships passing between Caliture and this island, seldom come under 17 or 18 fathoms from 2 to 3 miles off shore. Rocks project from the N. W. end of the island, with 17 fathoms water very near them, which must be avoided in passing.

The coast from it to Point Cocacheira.

POINT COCACHEIRA, bears from Berberyn Island about S. by E. ¾ E., distant 4½ or 5 leagues; the coast between them is generally of moderate height, and should not be approached under 20 fathoms by large ships, except about 2 or 3 miles to the southward of Berberyn Island, there is said to be good anchorage in 12 or 13 fathoms black sand, near the entrance of a small river. The depths along this part of the coast are not always regular, 20 or 22 fathoms is about 2 miles off shore, and 60 or 65 fathoms is from 3 to 4 leagues off, nearly on the edge of soundings. With the haycock bearing about east, there is a rocky bank with 30 and 32 fathoms on it, and 37 or 38 fathoms inside, between it and the land.*

Ragamma Point and adjacent coast;

RAGAMMA POINT, distant 3 leagues S. E. by S. from Cocacheira Point, may easily be known by a high rocky islet close to it, and other rocks around near the shore. Between these points, there is a large grove or plantation of cocoa-nut trees, near to which 2 sunken rocks lie at a considerable distance from the shore. The sea breaks on these when there is any swell, for they are nearly even with the surface of the water.† In passing along this part of the coast, do not come under 20 fathoms, the soundings being very irregular, and the bottom rocky toward the shore.

* This bank seems to be about 5 leagues off shore, extending a considerable distance to the southward; I have twice crossed over it in the night, therefore, could not ascertain its true relative situation.

† The outermost of these rocks probably lies in the stream of 16 or 17 fathoms, for I have passed between them and the shore in a boat, and had 11 fathoms rocky bottom.

and from thence to Point de Galle.

From Ragamma Point, to Point de Galle, the direction of the coast is S. E. by E., and the distance about 3 or 3½ leagues. The shore between them has a level appearance, covered with cocoa-nut trees, and dangerous to approach under 20 fathoms, several rocks being situated from 1 to 2 miles in the offing.

Gindure Rock, dangerous.

GINDURE ROCK, is very dangerous, and seems to be about 3 or 4 miles to the southward of Ragamma Point, and 2 miles distant from the shore, opposite to a reddish hummock standing near the sea. Returning from China, in the Anna, in 1802, after reaching Point de Galle, December 26th, the wind veered to the westward, with which we made short tacks, and borrowed too near the shore, not apprehending that any of the dangers lay so far out as we afterward experienced. At 5¾ P. M. after tacking in 30 fathoms about 3½ or 4 miles off shore, and 5½ miles to the westward of Point de Galle, we lay up N. N. W. and N. N. W. ½ W.; the people being at victuals the lead was not hove, as we did not consider danger so near, until half an hour after tacking, having run about 2 miles, the ship touched on a rock, the helm was put down immediately, and the water being very smooth, she came quickly round, having only *once grazed* on the rock, apparently near her centre. Whilst in the stays, had 5 fathoms by the lead, then 7, 9, 12 fathoms by the time she had gone her own length a-head; and before she was 2 cables lengths from it, the depth increased to 22 fathoms. When on the rock, the N. Westernmost extreme of the land was a little shut in with the high rocky islet close to Ragamma Point, our distance from that point 3 or 4 miles, and from the shore abreast we appeared to be at least 2 miles. The evening was too far advanced to discern Point de Galle, but it probably bears about E. ½ S. or E. ⅝ S. from the rock, distant 2 leagues.

How to avoid it.

In passing this danger, the rocky islet contiguous to Ragamma Point, should not be brought so far out as to be in one with the northern extreme of the coast, but the surest guide, is not to borrow under 22 or 20 fathoms, the latter depth being within 2 or 3 ships' lengths of this dangerous rock. On the shoalest part of it, there is only 13 or 14 feet water; it was fortunate the Anna escaped that part, as she drew 20½ feet water at the time she struck.

Other rocks.

About 3 miles to the eastward of Gindure Rock, and nearer the shore, there are 2 rocks covered with 5 or 6 feet water, on which the sea generally breaks, having 15 and 16 fathoms about a cable's length outside of them, with irregular rocky bottom between them and the shore, from 10 to 5 fathoms. Boats or small craft passing inside of these rocks, should keep nearer to them than the shore, but it is dangerous to be amongst them in the night. These two rocks are 3 or 4 miles to the westward of Point de Galle.

The Whale Reef.

WHALE REEF, is about 2½ miles to the westward of Point de Galle flagstaff, bearing from it W. 1° 45' N., and appears to be in the stream of 14 or 15 fathoms, distant from the shore 1½ or 1⅝ mile. It is a dangerous ledge of rocks, the shoalest part very little under water, and when the sea is smooth the danger is not always visible, for at such times, a small white surge can only be discerned to rise over it once in 4 or 5 minutes.* When there is much swell, the breakers on it run very high. The bight inside of it, on the west side of Point de Galle, is full of rocks; in passing it, and the Whale Reef, a ship ought not to borrow under 18 fathoms.

* January 5th, 1786, we were running along shore from the westward in the Atlas Snow, for Point de Galle Road, the sea being very smooth, the breaker on the Whale Reef was not discerned until we had 9½ fathoms rocks on the edge of it, at the same time a rolling breaker rose up about a pistol-shot within us; hauled off instantly, and soon had 16 and 17 fathoms.

In the Anna, 26th December, 1802, we stood into 15 fathoms about a mile to the westward of the Whale Reef, and next cast had 12 fathoms rocks, when we immediately tacked, but it is very imprudent to venture so far in, as we afterward found at 5¾ P. M., by touching on Gidure Rock a little farther to the westward, as stated above.

POINT DE GALLE, (OR GAULE) FLAGSTAFF, in lat. 6° 1′ N.* by observations taken on shore by Captain Basil Hall, of the Navy, in 1815, lon. 80° 20′ East, by mean of many lunar observations corroborated by chronometers, which made it 7° 22½′ East from Bombay Castle, and 2° 36′ E. of Cape Comorin: and I made it 2 miles west of Madras Flagstaff, measured by chronometers, with the flagstaff bearing north. Geo. site of Point de Galle.

The town and fort, are built on the point, which is rocky and bluff to seaward, with a rocky islet near it, called Pigeon Island, surrounded by smaller ones. The bay or harbour, is formed between the point and a piece of sloping high land to the eastward, which projects farther out to seaward than the true point. The entrance of the bay is about a mile wide, the soundings in it from 7½ to 4½ fathoms; but there being many rocks, covered with different depths, from 3 or 4, to 12 and 14 feet water, scattered over the entrance, and also inside, a pilot is requisite to carry a ship into the harbour, where they moor in 5 or 5½ fathoms abreast of the town.

Captain D. Inverarity's excellent survey of this harbour, published by Mr. Dalrymple in 1804, on a large scale, will be found of great use to guide a stranger into it; there being marks given to avoid the dangerous rocks, which are 13 in number within the entrance, exclusive of two outside: the following directions, for sailing into Point de Galle Harbour, are given from that survey.

In going in, to the eastward of the 12 and 15 feet outermost shoals, steer along the eastern shore, giving the Bellows Rock (which always breaks) a good birth, keeping the New Belfry open to the northward of the Flagstaff until you open the White Mark, or Painted Rock, with Watering Point, both situated on the eastern shore; then steer for Cook's House at the bottom of the bay, keeping it its own breadth open to the westward of the rocks off the west end of Gibbet Island, until you bring the two Belfries in one; then haul over to the westward, keeping the New Belfry a little open to the northward of the old, and when the south part of Elephant Rock is nearly on with the cocoa-nut tree on Pigeon Island, or the extreme of Utrecht or Eastern Bastion nearly on with the Flagstaff, you may then haul in to the northward for the anchoring ground, steering direct for Alexander's House (which is a large ½ mile to the westward of Cook's House) till in 4½ fathoms, this depth being a good birth for a small ship. This track between the central and N. Easternmost shoals, is the best for working into the harbour without a pilot, although not used by them. With directions for sailing into the harbour.

Going in by the western track, keep the White Mark well open with Watering Point, and steer to the N. Eastward until the Gull Rock (situated in the N. W. part of the harbour,) is open to the westward of a bushy tree called Pilot's Tree, and the outermost Flagstaff Rock, bearing W. ½ S., then steer direct for the westernmost turret of Cook's House, keeping it on, or a little open with the Haycock, carries you fair in between the 2 and 5 feet shoals, also between the 12 and 16 feet shoals, into a good birth for anchoring. This is the best track in the westerly monsoon if the haycock can be seen, as it is a leading wind into your birth; but it would not be prudent for a stranger to run into the harbour without a pilot, except in possession of the plan of it mentioned above, and then only in a case of necessity.

It is considered a safe place in all seasons of the year, but with strong S. W. winds a ground swell tumbles in. Good water, vegetables, and other articles of refreshment may be easily obtained. A low sandy beach with some rocky islets near it, and cocoa-nut trees behind, limits the bottom of the bay, and in the S. E. corner of it, on the north side of the high Rocky Point at the entrance, there is a wharf, and an excellent spring of water at the bottom of a cove, where a small ship may be careened: this bears from the Flagstaff about E. by S. ½ S. a large mile.

* Capt. R. Heywood of the navy, places it in lat. 6° 4′ N.

The outermost rock, off the entrance of the bay, bears from the Flagstaff about S. by E. ¾ E., distant near ¾ of a mile; it is called the 15 Feet Rock, or Shoal, has 10 fathoms water close to, all around, and covered with 15 feet. At a small distance from it nearly north, another rock covered with 12 feet water lies in 9 fathoms.

Anchorage in the road.

The best anchorage in the road, is to the S. Westward of these rocks, in 16 to 18 fathoms soft bottom, with the Flagstaff on the point bearing from N. N. E. to N. N. E. ¾ E., off the town near 2 miles; but when any articles are to be landed, or ships being in want of provisions and water, they will have a more convenient birth, by anchoring in the same depth, with the Flagstaff bearing N. ½ E. or N. by E. Out in 20 fathoms the bottom is rocky, where several ships have lost anchors: in 21 fathoms, with the flagstaff N. E. by N., we had our cable cut through by the rocks during the space of 24 hours, and lost the anchor although the weather was fine, with very little swell.

When the S. W. monsoon blows strong, it is unpleasant to anchor in the road, as the projecting land on the eastern side then becomes a lee shore, which is steep and rocky; on one of the outermost rocks close to this steep point of land, the sea breaks very high in bad weather, which is that called the Bellows in the Dutch plans.

Mr. W. Gibson, master attendant at Point de Galle, gives the following directions for sailing into this port.

To sail into the harbour, be careful to keep the flagstaff well to the eastward of the *High* Belfry until you open the White Rock, situated on the opposite side of the bay, which will carry you clear of the 12 Feet Shoal; you may then steer to the eastward (keeping the rock well open) until up with the 4 Feet Rock, on which a boat with a flag is stationed. This rock is very small, steep to, and may be rounded close, but should the boat not be there, (from the sameness of the land) the only mark to clear it, is a remarkable tree on the brink of the hill, in one with the Gull Rock; then a north course will carry you clear of the 9 Feet Rock, on which also a boat with a flag is stationed; nor are there many instances of these boats being from their stations, as they always repair to them the moment that the pilot leaves the shore. But I mention this in case of an enemy appearing, when a small vessel might push up the harbour, but I would recommend a large ship to continue her course to the eastward keeping the White Rock well open, or to steer for it until the *Single* Cocoa-nut Tree on Gibbet Island bears about north, where she may anchor in 7 or 7½ fathoms, with the point of the watering place bearing about S. E. Here, she will be under the guns of the fort, and although the ground on this side of the harbour is not to be depended on, yet a ship may lie safe until assistance can be procured from the shore.

Hills and land.

From Point de Galle Road the haycock bears N. by E. distant 7½ leagues. This is a high conical mountain in lat. about 6° 22½′ N., which is very conspicuous from the offing, in sailing round the southwest part of the island from Colombo to Dondre Head. About 3 leagues eastward from the haycock, there is a table hill with a nob or hummock on it, which is also visible from the road. The land to the westward is generally low, with cocoa-nut trees fronting the sea, but to the N. Eastward of Point de Galle, it is formed of several ridges of hills of various aspects.

Bank of soundings.

The bank of soundings, extends 3 or 4 leagues distance to the southward of Point de Galle, on which ships may anchor with a stream or kedge, should the wind fail and the current be unfavorable. In such case, they may anchor in from 20 to 40 fathoms on any part of it, between Point de Galle and Colombo; the bottom is often sand and gravel, but in some places rocky. In coasting along from the former place to the westward, a ship ought not to come under 26 or 28 fathoms during the night until she approach Caliture, for these depths are sometimes found within 3 or 4 miles of the shore. Between Caliture and Colombo the coast is more safe, and may be approached to 15 or 16 fathoms in the day, but these depths are too close to stand into during the night.

A caution in coasting along shore.

Before October is advanced, strong westerly winds and leeward currents, render it sometimes very difficult to get round the S. W. part of Ceylon, from Point de Galle to Colombo.

The Company's ship Aurungzebe, on the 23d of August, 1706, sailed from the former place, stood to lat. 6° S. with westerly winds, then tacked to N. Westward, and saw the south part of Ceylon again, on the 25th of September, she stood back to 2° S., then tacked and stood to the northward till in lat. 7° 10′ N., without seeing land, being to the eastward of Ceylon; she tacked again to the southward, and got sight of Point de Galle on the 3d of November, and on the 11th reached Colombo.

# *SOUTH COAST of CEYLON, from POINT DE GALLE to the ELEPHANT HILL;*

## GREAT AND LITTLE BASSES, WITH SAILING DIRECTIONS.

THE COAST, from the headland that forms the east side of Point de Galle Harbour to Red Bay, lies E. by S., the distance 4 or 4½ leagues. The land fronting the sea is uneven, of moderate height and woody, and about a league to the westward of Red Bay, near the shore, there is a small island covered with trees, called Woody Island. This part of the coast is steep, and seldom approached under 30 fathoms. At the west point of Red Bay, we stood within 1½ mile of the shore in the Anna, and then tacked in 26 fathoms. The coast from Point de Galle to Red Bay.

Small vessels bound into Red Bay, keep close to the western point, and anchor in 5 or 6 fathoms, but it seems unsafe for large ships, the ground being foul, and there is a dangerous reef of rocks near the anchorage.

MATURA, in lat. 5° 58′ N. lon. 80° 40′ E. bears about E. ½ S. from Red Point, the east point of Red Bay, distant 8 miles; the land between them is moderately elevated, and the coast very steep, having 60 fathoms in some places within 2 miles of the shore. and to Matura; geo. site.

Matura is a considerable village with a fort, conspicuous from seaward when it bears between N. N. W. and N. E.: ships may anchor here in the N. E. monsoon abreast of the town in 20 and 22 fathoms, sand, shells, and ouze, off shore about 2 miles; under 20 fathoms the bottom is generally foul. Plenty of wood, and good water may be procured in the river, the entrance of which is about ½ a mile to the westward of the fort; boats going into it to fill water, should have some of the natives as pilots to guide them clear of the dangerous sunken rocks at the entrance, on which they might be liable to strike and overset by the strong outset.

Matura Island, lies opposite to the fort, near the shore, and is small and rocky, resembling a haycock; boats find shelter under it, the surf being generally high on the shore, canoes are used for passing to the main.

The coast from Matura to Dondre Head, stretches S. E. by E. to S. E. by S. about 4 miles, being remarkable by some red cliffs about half way between them, resembling those at Red Bay, but are more conspicuous. The coast from thence eastward.

DONDRE HEAD, the southernmost land of Ceylon, in lat. 5° 55½′ N. lon. 80° 43′ E. by chronometers from Point de Galle and Cape Comorin, is a low point of land, with a grove of tall cocoa-nut trees on its extremity, by which it may be known. A reef of rocks projects from it about 1½ mile to the westward, having 9 and 10 feet water on it, upon which Geo. site of Dondre Head and the adjacent coast.

the sea sometimes breaks very high.* To the westward of this, ships may anchor in 20 fathoms, abreast the red cliffs, where they will be sheltered from N. E. winds; but directly off the extreme point of Dondre Head there is no ground with 100 fathoms line, within 1 or 1½ mile of the shore, so steep is this headland. Directly north from it about 6 leagues inland, there is a hill resembling a saddle when seen from the S. Eastward, and the land along this part of the coast is generally of moderate height, formed of a diversity of hills, which become more elevated in the interior.

Gaelies Bay. GAELIES, is a small bay about 2 miles to the eastward of Dondre Head, where there is said to be anchorage in 4 and 5 fathoms ouzy bottom, and shelter from west, north, and south winds. The dangers are visible, but it is difficult of access, and vessels entering it, keep close to the high steep point of the bay: this place is, however, probably not very safe, except for small vessels.

Nielwel and the coast in its vicinity. NIELWEL, a place of some trade, with a considerable bay, bears from Dondre Head E. N. E, distant about 6 leagues, having on the west side of it a pagoda, built on a hill, near the sea. This place has anchorage on the west side of the bay, in 5 and 6 fathoms, where vessels lie sheltered from westerly winds; and about 3 or 4 miles off shore, the depths are from 30 to 34 fathoms. About 2 leagues to the westward of Nielwel, there is a plantation of cocoa-nut trees at a place called Dickwel, and a small bay, to the westward of which, the coast is fortified by a reef projecting about 2 miles from the shore. In passing along this part of the coast, large ships seldom come under 30 fathoms, and are then distant from it 2 or 3 miles.

Coenacker Bay, and Tangale. COENACKER BAY, has in it a rocky islet, and bears from Nielwel about E. by N. ½ N. distant 4 or 5 miles; to the E. N. E. about 2 leagues farther, there is the point and small bay of Tangale.

The coast near Waluwe, WALUWE RIVER, bears about E. by N. ½ N. 4 leagues from Tangale; the coast between them is low and barren close to the sea, but high inland, and may be approached to 25 fathoms within 4 or 5 miles of the shore. Off the entrance of Waluwe River, at the distance of 3 or 4 miles, there is a rock on which the sea generally breaks, said to have a channel with 7 and 8 fathoms sandy bottom between it and the shore, through which small vessels may occasionally pass: a little inland from the entrance of the river, there is a small mountain of barren aspect.

and to Mago Point, MAGO POINT, bears from Waluwe E. N. E. distant near 3 leagues; this point is low and surrounded by rocks, which extend out considerably, and to the westward; it is therefore, prudent, not to come under 24 or 25 fathoms in passing between these places. Over Mago Point, a ridge of undulating hills is situated a little inland, but nearer the sea than any of the other high land.

and from thence to the Elephant Hill. ELEPHANT HILL, bears from Mago Point nearly N. E. by E. distant about 5 leagues; it is very remarkable, being a high isolated rock on the low land close to the sea,

* It appears to have been on this reef, that the Company's ship Euphrates was wrecked, on the night of the 2d of January, 1813. She had sailed from Colombo bound to Bengal, and at Sun-set 2d of January, Matura bore N. E. by E., Dondre Head E. by N., off shore about 4 miles; steered E. by S. with a light westerly breeze, going 2 knots, had run 10 or 11 miles from sun-set till 11 P. M. then lost the deep sea lead in sounding, and on heaving the hand lead, found only 9⅛ fathoms water, at the same time breakers were seen near us, and the ship twice missing stays, fell upon the rocks, and soon filled with water. This ship, appears not to have steered sufficiently to the southward to round Dondre Head; instead of E. by S., a S. E. or S. E. by E. course, was certainly more proper from the situation she was in, at sun-set, to clear the head with a light breeze.

from which the Great Basses bears S. 5° E. distant 9 or 10 miles. The coast from Mago Point to the Elephant is rather low, barren and sandy near the sea, and may be approached in day-light to 24 or 25 fathoms, but not under 30 or 32 fathoms in the night, particularly in the vicinity of the Great Basses.

GREAT BASSES, called RAMANPAAJ by the natives of Hindoostan, is a ledge of rocks near a mile in extent, elevated a few feet above water, on which the sea breaks very high in bad weather. According to the natives, there stood on it formerly a pagoda made of brass, but at present nothing appears but the long flat rock, and when the sea runs high the surge at times completely covers it. This dangerous ledge is about 3 leagues distant from the shore, and is on with the Elephant Hill bearing N. 5° W. The observations of some navigators place it in lat. 6° 7′, or 6° 8′ N., but by good observations, taken very close to it in passing two different times, I made it in lat. 6° 11′ N. and in lon. 81° 38½′ E. or 1° 18½′ East from Point de Galle by 3 chronometers agreeing. Captain P. Heywood, of His Majesty's ship Dedaigneuse, made it 1° 19′ E. from Point de Galle by chronometers, and in lon. 81° 40′ E. by lunar observations. There is a safe channel between it and the main, having sandy bottom 12 and 14 fathoms near the Basses, and 7 or 8 fathoms toward the shore. Close to the rock on the outside, there are 21 and 22 fathoms, about ½ a mile from it 24 fathoms, 34 fathoms at 2 or 2¼ miles distance, 45 and 50 fathoms about 2 or 2½ leagues off, from whence the bank shelves suddenly to no ground.

Great Basses. Geo. site, and soundings near it.

THE CHANNEL WITHIN THE GREAT BASSES, may be used occasionally with day-light, but not without great caution, and by borrowing toward the Great Basses, because the straggling dangers with which the Little Basses is surrounded to a considerable distance on every side, extend from it in a direct line about half way to the Great Basses; and as this Rocky Bank has overfalls on it from 12 to 7, and 4 fathoms coral rocks, (as will be seen hereafter) and there probably may be less water in some parts, it ought therefore, to be avoided.

Channel within the Great Basses.

Ship Agnus, Capt. William Richardson, passed inside of the Great Basses, on the 3d of March 1809; had one cast of 9 fathoms off Mago Point, where the rocks project some distance from the shore: steered then about N. E. deepening quickly into 14, 15, 16, and 17 fathoms, and anchored in the evening in 12 fathoms, with the Great Basses bearing S. 36° E., Elephant Hill N. 13° E., and Mago Point S. 64° W. Weighed at midnight with the land wind, steered N. E. by E. and E. N. E. in irregular soundings, decreasing from 12 to 8 fathoms, and deepening again by steering a little more out; toward day-light, steering out east, deepened to 17 fathoms, and shoaled again to 12 fathoms upon the Rocky Bank situated between the Great and Little Basses.

The whole of the coast, from Elephant Hill, to a considerable distance to the northward of Chimney Hill, has a steep sandy beach, with a few rocks projecting a short distance into the sea in some places.

LITTLE BASSES, in lat. 6° 24½′ N. lon. 81° 55′ E., bears from the Great Basses N. E. ¼ E. distant 7 leagues, and is composed of a ledge of rocks a little above water, with others contiguous, projecting out under water to a considerable distance; the rocky ledge above water being low, is not perceived unless a ship pass near, but the breakers on it may always be discerned. It is distant from the shore 6 or 7 miles, bearing about S. S. E. from a sandy point of land called Julius Nave, but which is not discernible on this bearing; from the Elephant Hill it bears about E. by N., and is in one with Chimney Hill bearing N. 49° W. This is a pretty high hill near the sea, having on its declivity not far from the summit, a conspicuous rock resembling a chimney. A little farther inland to the N. West, is Pagoda Hill, taking its name from a large rock near its summit resembling a pagoda or castle, which

Geo. site of the Little Basses. Adjacent coast and hills.

is much larger than that on Chimney Hill. These hills are in one bearing N. W. ½ N.; when Chimney Hill bears N. W. it is then touching the north part of Pagoda Hill. Near these, other hills are situated, and the land is mountainous farther in the country, but in clear weather, Chimney Hill will easily be distinguished with the telescope, and answer as a guide to point out when a ship is approaching, or opposite to the Little Basses.

Soundings. Close to the rocks, there is on the outside 18 and 19 fathoms, about 2 miles from them 28 or 30 fathoms, and 2 or 2½ leagues from them, 45 and 50 fathoms; but no ship ought to approach them nearer than 2 miles.

Inside channel dangerous, except close to the main. THE CHANNEL INSIDE THE LITTLE BASSES, is not safe for large ships, there being about mid-way in a direct line between them and Julius Nave Point, 2½ and 3 fathoms rocks, where the French ship Resolution struck, and where H. M. S. Dædalus was lately wrecked. Should a ship pass through in a case of necessity, she ought to keep near the main, within 1 mile of Julius Nave Point in 6 and 7 fathoms; the depths are nearly the same in mid-channel, close to the rocky patches which extend from hence to the Little Basses, rendering the passage dangerous, except close to the main.

Capt. William Richardson, observes, that having occasion to pass inside of the Little Basses, found the channel safe by keeping close along shore, in 5½ to 6 and 7 fathoms regular soundings; but a ship ought not to approach near to the S. W. part of the Little Basses in coming from seaward, for a reef is thought to extend in that direction to a considerable distance. Steering in, we shoaled from 20, quickly to 12, 8, and one cast of only 4 fathoms coral rock, then deepened over toward the shore to 7, 8, 10, and 12 fathoms fine sand, the Little Basses just in sight from the deck bearing N. E. by E., and Elephant Hill W. 2° S. Also a little farther to the southward, nearly in the same direction from the Little Basses, from the mast-head, had 6 fathoms, with Elephant Hill bearing W. ½ N.

Sailing Directions. THE COURSE FROM DONDRE HEAD to the Great Basses, is about E. by N. ½ N., the distance 19½ or 20 leagues; but the *prudent* navigator, ought not to place much confidence in the distance run by the log, during the night, for the currents are frequently strong, and their direction uncertain. In the S. W. monsoon, when the wind blows strong along the south coast of Ceylon, the current runs with it to the eastward, a ship passing then from Dondre Head, will be sooner abreast of the Great Basses than expected. In a run of 24 hours from Point de Galle, in June, 1794, the easting given me by the log was only 46 miles to the eastern part of the island, whereas, the true difference of meridians between these places is about 1° 47′ E. These strong easterly currents are not constant, particularly in the vicinity of the Great and Little Basses, for there, and along the east side of the island, the current frequently sets to the southward in the S. W. monsoon, and almost constantly so, during the other monsoon.

Some ships after passing Dondre Head, steer in the night E. and E. by S. in the S. W. monsoon, to give the Basses a good birth, which carries them so far off the land, that they are obliged to haul to the N. W. at day-light, close to the wind, on purpose to regain it; and the whole of the following day, is sometimes spent, before they are enabled to approach the coast about the eastern part of the island.

Other ships, steer a course inclining toward the shore, and are thereby liable to run into great danger during the night; some have narrowly escaped destruction, whilst others have been really wrecked, as will be shewn by the following extracts from their journals.

H. M. Frigate, La Virginie, was nearly lost, by getting unexpectedly between the Basses and the shore in the night.

Instances of several ships being in danger near the Basses. H. M. Ship Phæton, and the Sir Edward Hughes in company, made the Island Ceylon in the evening, 23d May, 1804. Steering N. E. and N. E. by E., at 9 P. M. they sounded, and had 10 fathoms rocks; hauled out S. E., and deepened to 15, 18, and shortly after no

ground 30 fathoms; steered then E. S. E., E. by N., and N. N. E., and at half-past 5 A. M. saw the breakers on the Little Basses bearing W. ¼ S., had then ground 17 and 21 fathoms, hauled out east, and soon had no ground 25 and 35 fathoms. These ships appear to have passed inside of the Great Basses without seeing that danger, and must have been close to the Rocks of the Little Basses when in 17 fathoms at half-past 5 A. M.

The Ceres, with the fleet in company, bound to Madras and China, in 1798, made the Island Ceylon before sun-set. The course steered after dark, carried them too close to the land, and it appears that they did not sound, for about 1 A. M. the breakers on the Great Basses were seen from the Lord Nelson, very near, on the starboard side, the fleet being inside of them.

The signal of danger was then made; finding they were in shoal water, and their cables not bent, they hauled out to the eastward between the Great and Little Basses, having passed inside of the former unexpectedly.

The Contractor, from England bound to Madras, was abreast of Dondre Head, 1st Aug. 1792, at noon the observed lat. 5° 45′ N., and the lon. 80° 44′ E. by chronometer, from observations ☉ ☽, the extremes of the island then bearing from N. W. ¾ W. to N. E. ½ E., having experienced an easterly current of 45 miles during the preceding 24 hours. August 2d, from noon yesterday steered along shore, and at sun-set, the extremes of the land bore from S. W. by W. to N. E. by N.; from this time steered E. by N. and E. N. E. 19 miles, and N. E. 6 miles to 9 P. M., had then 17 fathoms soft ground several casts, stood off E. N. E. 6 miles till 10 P. M., with *an intent* to give the Great Basses a *good birth*, but about 10 P.M. saw breakers close aboard on the starboard bow, hauled up instantly to the northward, and avoided inevitable destruction; shortly after saw the main, and thinking it imprudent to run between it and the rocks in the night, anchored in 16 fathoms soft ground, the breakers bearing S. E. about 1½ mile. At day-light, sent the boat to the E. N. E. to examine the passage, where even bottom was found from 20 to 13 fathoms 5 or 6 miles to the E. N. Eastward. At 8 A. M. weighed with some difficulty (the ground being stiff mud) and followed the boat; passed the breakers on the inside, distant about a mile, and then hauled out to the eastward.

The ship Soliman Shah, of Surat, got close to the Little Basses in the night, and anchored; at day-light, found she was so close to the rocks, that they were obliged to cut the cable, to cast her clear of the dangers.

Dædalus lost on the rocks inside the Little Basses, in 1813.

H. M. S. Dædalus, was unfortunately lost on the rocks, about midway between the Little Basses and the main, on the 2d July 1813, and several of the 1200 ton ships under her convoy, bound to Madras and China, were nearly sharing the same fate, as will be seen by the following extracts from their journals. The dry haze which prevails greatly about this part of Ceylon, deceived them in their distance off the land, thinking themselves farther from it than they really were; and without great caution, strangers are very liable to make this mistake.

Rose, 2d July 1813, at sun-set Dondre Head bore N. N. E. ¾ E. distant 4½ miles, steered East 11 miles, E. by N. 55 miles, and E. N. E. 13 miles, till 6 A. M., hauled up North 7 miles, and at 7 A. M. saw the land bearing north distant 10 or 12 miles; hazy weather. Steered N. N. E. 7 miles till 8 A. M., then saw the Little Basses on the starboard quarter, bearing S. E. about 3 miles; had 7 and a ¼ less 7 fathoms, hauled out E. N. E. and deepened, Chimney Hill bearing N. W. At 9 A. M. when in 35 fathoms hove to, and sent our boats to the Dædalus, aground on the rocks between the Little Basses and the main.

Other ships in the fleet, were also nearly lost amongst those dangers.

Atlas, Capt. Maynes journal, 2d July 1813, during the night, kept considerably outside of the fleet, thinking the course steered would carry us too near the Great Basses. At day-light, the body of the fleet 5 miles to the northward of us, hauled up by signal made to steer north, but judging the fleet were bearing too much on the Little Basses, some of the ships then 2 miles to the west of us, and the weather being hazy, we only steered N. N. E.

½ E. At a ¼ past 8 felt the ship graze on rocks, hauled out east, grazed a second time, hauled out S. E. and saw the breakers on the Little Basses bearing N. N. W. ½ W. distant 1½ mile; had soundings 3¼, 5, 7, 10, then 20 fathoms. Observed the Dædalus aground on a shoal, between which and the Little Basses, the whole of the fleet hauled out. After joining the fleet to the N. Eastward of the Little Basses, hove to, and sent all the boats to the assistance of the frigate, with carpenters, but after every exertion to save her, at 6 P. M. she heeled over on the larboard side, and went down.

It was fortunate, that this new and valuable ship, was not wrecked on these sharp straggling rocks, which surround the Little Basses, on the outside of which, she was the only ship that passed. Some of the other ships, also grazed on the rocks inside, one of which, was the Bridgewater, close on the starboard quarter of the Dædalus when the latter grounded; and as this was immediately observed by Capt. Hughes, he hauled out, and grazed on the rocks twice, but fortunately passed over them, by which this new ship of 1200 tons, was also saved from destruction.

Hannahjee lost on the Little Basses.

Ship Hannahjee, Capt. Geo. Henderson, in Sept. 1809, was wrecked on the Little Basses. Working to the southward, when standing in toward the land, perceived between 7 and 8 P. M. they were close to the Little Basses; the helm was immediately put down, but the ship refused stays, and fell upon the rocks.

Steering along in 34 fathoms in the Anna, 24th March, 1801, the breakers and part of the black rock of the Great Basses were plainly seen in the night with the telescope, for a considerable time in passing, and appeared to be distant about 2 miles; but neither could be discerned without the telescope.

To sail from Dondre Head, and to pass the Basses in the night.

TO AVOID SUCH DISASTERS, a ship being abreast of Dondre Head, at 2, 3, or 4 leagues distance in the S. W. monsoon, ought to steer about E. by N. or E. by N. ½ N., according to the distance she is from the land; taking care to sound in time, if it is night. Although the coast about Dondre Head is steep, with deep water near the shore, by the time she has got about 10 leagues to the eastward, the soundings extend farther out, and are pretty regular from thence to the Great Basses; the bottom sandy, often mixed with mud. They are most regular from the Great Basses to the distance of 8 or 10 leagues to the westward, generally from 26 to 30 fathoms about 2 and 3 leagues off shore, toward the Basses; and the same depths about 3, 4, and 5 miles off shore, farther to the westward. When the depths are more than 40 fathoms, the bank in general, shelves quickly to no ground.

When a ship in the night, has run 8 or 10 leagues to the eastward of Dondre Head, it will be prudent to get a cast of the lead, and she ought to run under moderate sail if the wind is brisk, that good soundings may be obtained by heaving to, or otherwise. When she has got soundings, care must be taken not to come under 34 or 36 fathoms, by steering a course parallel to the coast, and keeping the lead going, particularly when it is apprehended that she is approaching the meridian of the Great Basses; she may then, haul out a little on the edge of soundings if the night be dark, or the weather unfavorable; but should the night be clear, with settled weather, she may keep in soundings between 34 and 40 fathoms, for by not coming under 34 fathoms, she will pass outside of the rock about 2 miles distance, which is as near as can be done with prudence in the night. In day-light, with a steady breeze, a ship may borrow toward it, to 24 or 25 fathoms, she will then be distant from it about ½ a mile.

Having passed the Great Basses in the night, a course may be steered about N. E. by E., to pass the Little Basses, which is distant 7 leagues from the former, attending still to the lead, and not coming under 34 or 35 fathoms until certain of being to the N. Eastward of this danger, or until day-light appears.

Coming from the northward in the night, with the wind fair, or from the land, the same method may be adopted, keeping on the edge of the bank of soundings, taking care in passing

these dangers, not to come nearer them than 34 or 35 fathoms; and as a ship may sometimes be greatly retarded or accelerated in her progress by uncertain currents, it will be prudent not to borrow under 34 or 35 fathoms in the night, on any part of the S. E. coast of Ceylon; more particularly, as they sometimes set toward the shore about the Basses, but generally to the Southward or S. Eastward.

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# *EASTERN COAST of CEYLON, from the ELEPHANT HILL to TRINCOMALE;*

## WITH SAILING DIRECTIONS.

Coast from Elephant Hill to Julius Nave;

COAST OF CEYLON, from the Elephant Hill, extends about N. E. by E., 5 or 5½ leagues, to the high sandy point of Julius Nave,* and is low, barren, and sandy fronting the sea; but this part is seldom approached, as few ships pass inside of the Great Basses, unless by accident, or in a case of necessity. Should a ship, in settled weather, in the day time, adopt the inside channel, she ought to proceed as the direction of the wind may render necessary, borrowing toward the Basses to 12 or 14 fathoms, and to 8 or 9 fathoms near the main. The Rocky Bank, with from 9 to 4 fathoms on it, about mid-way, in a direct line between the Great and Little Basses, and probably joining to the latter, may be avoided by keeping within 1, 2, or 3 miles of the Great Basses; for as Capt. Richardson had only 4 fathoms on one of the rocky patches of this bank, no large ship should venture to cross over it, as there may be even less than 4 fathoms on some spots.

A large ship ought not to pass between the Little Basses and the shore, on account of the rocks in that channel, already mentioned in the description of those dangers.

and to Magame.

From Julius Nave Point, the coast lies N. E. by N. ¼ N. about 5 leagues, to another small projection called Magame, which bears from the Little Basses about N. by E. ¼ E. 5½ or 6 leagues, and is said to have shoal water extending from it to a considerable distance. This part of the coast is also low, and sandy facing the sea, with Chimney Hill, Pagoda Hill, and others, a little inland to the westward, already described in the preceding section. The soundings on the bank stretching along this part of the coast, are generally regular, and give sufficient warning, when it is approached in the night; the depths are 17 and 20 fathoms from 1½ to 2½ leagues off, and between 40 and 50 fathoms near the edge of the bank, from 4 to 5 leagues off shore.

Geo. site and description of the eastern part of Ceylon.

AGAUS, OR AGANIS, in lat. about 6° 50′ to 7° N., a space of land with some hillocks near the sea, and the easternmost part of the Island Ceylon, is about 6 miles east of the meridian of the Little Basses, being 1° 41′ E. from Point de Galle Flagstaff by chronometers, and in lon. 82° 01′ E., by mean of many lunar observations taken by me at various times.

Between the hillocky land of Aganis, and the hills to the N. Westward of the Little Basses, there is a considerable space of low land, excepting an isolated mount on it, which has a regular peaked appearance when viewed from eastward; but resembles a saddle, having a gap in it when seen from the southward.

From the Little Basses to the land of Aganis, the course is N. N. E. ½ E. and N. N. E., the distance 10 leagues; between them, the coast may be approached with safety to 17 or

* This point is not easily distinguished from the offing.

18 fathoms, about 1½ league off shore, the depths on the bank being pretty regular, generally sandy bottom; and the edge of it where there are 45 and 50 fathoms, is distant 4½ or 5 leagues from the shore.

At a considerable distance inland from Aganis, in lat. about 7° N., there is a table mount, called Westminster Abbey, with a large square nob or turret on its north end, and there is another peaked hill nearer the sea, generally called Aganis Peak; these are in one with each other, bearing W. by S.

The whole of the S. E. Coast of Ceylon, is of circular form, rounding gradually, without any conspicuous headlands projecting far into the sea. From lat. 6° 30′ to 7° N. is an advisable place for ships running toward the east part of the island in the N. E. monsoon, to make the land, taking care to fall in with it, in the night, to the northward of the Little Basses.

Geo. site of Baticolo, and the coast from Aganis.

BATICOLO RIVER'S entrance, in lat. 7° 44′ N., lon. 81° 52′ E. by chronometers, bears from the land of Aganis, in lat. 7° N., about N. by W. distant 14½ or 15 leagues, the coast between them having a little convexity, and generally very low near the sea, interspersed with plantations of cocoa-nut trees, and some houses or small villages. In this space, a ship may in coasting, generally borrow to 19 or 20 fathoms, these depths being from 2½ to 3 or 4 miles off shore, and the bank of soundings extends out from it to the distance of 2½ or 3 leagues, where the depths are from 45 to 70 fathoms, but not always regular: for in a few places, within 4 miles of the shore, there are 35 and 38 fathoms. In working during the day, a ship may in some places, stand to 15 or 16 fathoms, and tack within 2 miles of the shore; but 20 or 22 fathoms is as near as it should be approached in the night; for in these depths, if the moon shines bright, the surf will be seen breaking on the sandy beach, or the noise of it may sometimes be heard with the land wind. From some of the small projecting points, foul ground is said to extend about 1 or 1½ mile, rendering it prudent not to come under 20 or 22 fathoms near them, particularly in the night.

Nearly abreast the Friar's Hood, but rather to the southward, there is the entrance of a river, which extends a great way inland, having to the southward a pagoda, among a grove of cocoa-nut trees, at a place called Tricoll.

Geo. site of the Friar's Hood, description of it and other hills.

The coast contiguous to Baticolo is low, but several circumjacent mountains or hills, situated inland, are conspicuous in sailing along this part of the island. The most remarkable, and most elevated of these, is the FRIAR'S HOOD, situated in lat. 7° 25½′ N., lon. 81° 44′ E. by chronometers, about 4½ or 5 leagues from the sea, which leans over to the left, resembling a Friar's Hood when bearing to the S. Westward, but has the form of a pyramid when it bears to the N. Westward. To the southward of it, there is another mountain somewhat similar in appearance, called the False Hood, which is not so high as the former. Far inland, about 7 leagues to the westward of the Friar's Hood, there is a round conical hill called the Kettle Bottom, that may be seen in clear weather; and on the middle of the great level plain, in lat. 7° 49′ N., is situated about 6 leagues W. by N. from the entrance of Baticolo River, the Sugar Loaf, a sharp isolated cone.

and of Baticolo.

Baticolo River, is narrow at the entrance, and not seen except from the northward, the opening being in that direction; but it may be known by a house and flagstaff, where the colours are generally shewn to passing ships. There is 6 feet on the bar at low water, and the tide rises about 2 or 3 feet perpendicular, high water at 4 hours on full and change of the moon, but not always regular.

The fort is 4 or 5 miles up the river; on an island where water may be procured from a well; buckets must be taken on shore to draw up the water, and the casks are landed at the wharf, and rolled to the well. Wood may be cut near the bar, on the banks of the river.

The anchorage in the road is not always safe in the N. E. monsoon, when a gale from that quarter may be liable to happen from September to February, but in the S. W. monsoon it is safe. Ships generally anchor to the N. W. or Westward of the reef, with the entrance of the river about south, the Friar's Hood S. S. W., distant about 2 miles from the river's entrance, abreast of a cluster of rocks projecting from the shore to the northward of the river. Anchorage.

H. M. S. Terpsichore, at anchor in 8¼ fathoms, off shore about 1⅝ mile, had the Friar's Hood bearing S. 25° W., entrance of Baticolo River S. 24° W., Sugar Loaf N. 80½° W., a rock even with the water's edge S. 56° W., northern extremity of land N. 36° W., and the southern extreme S. 39° E. At the distance of 2½ miles E. by S. ½ S. from the ship, a rock was found with 14 feet water on its shoalest part; on the deepest part 3½ fathoms, being about ¼ of a cable's length in extent N. E. and S. W., and 9 fathoms breadth. A little outside of it, there are 9 and 10 fathoms clear ground, and close to, 8 fathoms; on the inside close to it, from 5½ fathoms to 7½ fathoms rocky bottom. By keeping the notch in the grove open, and distant from the shore not less than 2 miles, you will be clear of all danger. A dangerous rock,

From the rock, the Friar's Hood bore S. 29° W., entrance of the river S. 56° W., Sugar Loaf N. 79° W., the ship N. 74° W., and the notch in the grove just shut in, bearing south.

About a mile S. E. by E. ½ E. from the ship, and rather more than a mile from the shore, 20 feet water was found on a shoal, which joins to a coral bank stretching 3 or 4 miles parallel to the shore, having uneven ground on it from 4 to 7 fathoms. and shoal.

In coming from the southward, be careful to keep the notch, or two groves of cocoa-nut trees open, until the Friar's Hood bears S. S. W. then you may run in with safety, crossing the coral bank in 6 and 7 fathoms; continuing to steer in toward the shore, you will deepen to 8½ and 9 fathoms; there, the ground is composed of coarse brown sand, intermixed with small broken shells, the entrance of Baticolo River will then be open, bearing S. S. E. a little Easterly. How to avoid them.

INTREPID'S ROCK, examined in H. M. S. Intrepid, although the bearing of the entrance of the river from it is somewhat different from that of the Terpsichore, it seems probable that the same rock was examined by both ships. By the Intrepid's account, the entrance of Baticolo River bears from it S. 52° W., the Sugar Loaf N. 79° W., and the Black Rock near the shore S. 86° W.

To avoid these dangers, on the N. E. side of the entrance of Baticolo River, ships passing in the night, should with the land wind, keep the lead going, and not come under 24 or 25 fathoms water, which will carry them 1½ or 2 miles clear of the foul ground. With favorable weather in day-light, they may occasionally borrow to 19 or 18 fathoms towards it, and then will be from 2½ to 3 miles off shore, but near the edge of foul ground.

VENLOOS BAY, OR INLET, in lat. 7° 57′ N. lon. 81° 44′ E., bears from the entrance of Baticolo River N. W. by N. distant about 5½ leagues; the coast between them is low and woody, and may be approached occasionally to 10 or 12 fathoms; but in the night, large ships ought not to come under 16 or 18 fathoms, from 2 to 3 miles off shore. Venloos Inlet, is rocky at the entrance, off which a ship may anchor in 12 or 14 fathoms, about 2 miles from the shore, but it is little frequented. When abreast of this place, the Sugar Loaf bears to the S. Westward, which is the nearest high hill. About 6 leagues to the westward of the Sugar Loaf, there is a hill in the form of a quion, and 2 smaller ones nearer the sea to the W. N. W. of Venloos, one called Baron's Cap, the other called the Small Quoin, being that nearest the coast. Geo. site of Venloos Bay, the adjacent coast,

From Venloos Bay to Foul Point, the S. E. extremity of Trincomale Bay, the direction of the coast is about N. N. W. ½ W., and the distance 12 or 12½ leagues. It is generally and from thence to Foul Point.

low and woody, with steep rocks fronting the sea, but in many places there is a white sandy beach.

Ships passing between these places, may sometimes meet with overfalls of 2 fathoms at a cast, the bottom being often rocky and uneven; in the night, they may steer along in soundings from 18 to 23 fathoms, clear of all danger; with favorable weather, in day-light, the shore may be approached to 15 or 16 fathoms, and in some places to 10 or 12 fathoms. From 2½ to 4 leagues to the southward of Foul Point, a chain of rocky islets lines the shore, some of them about a mile from it, on which the sea breaks very high in bad weather. Another rocky islet, called Prôvidien Island, is said to lie close to the shore, about 3½ leagues to the northward of Venloos Bay; the coast between them is rocky, and forms a bight.

How to sail to the northward in the S. W. monsoon.

Ships bound to the southern parts of the Coromandel Coast, or to Trincomale, should in the S. W. monsoon, keep near the eastern coast of Ceylon, in passing from the land about Aganis to the latter place; the land winds blow then very strong in the night, and frequently in the day, rendering it difficult for an indifferent sailing ship to regain the coast, if she should unexpectedly get far to seaward, where the current generally sets to the eastward in that season. Near the shore, along the N. E. coast of Ceylon, it is fluctuating in the S. W. monsoon, generally weak, and sets mostly to the southward.

There is at present, very little variation of the compass around the island Ceylon, or on the Malabar, or Coromandel Coast.

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# *TRINCOMALE BAY, BACK BAY, and the CONTIGUOUS COAST*

## WITH SAILING DIRECTIONS.

FOUL POINT, the S. E. point of Trincomale Bay, named from a dangerous reef projecting from its extremity upward of a mile to the N. N. Eastward, is low and woody, and the breadth of the entrance of the bay between it and Flagstaff Point is about 5 miles, this bearing from the former about N. W. ¾ W.

Geo. site and description of Flagstaff Point,

and the peninsula forming Trincomale Harbour.

FLAGSTAFF POINT, in lat. 8° 33½′ N. and lon. 81° 22′ E. or 60 miles east of Madras, and 8° 26′ E. from Bombay Castle by chronometers, agreeably to Captain P. Heywood's observations, and in lon. 81° 28′ E. by lunars,* is high, steep to seaward, covered with trees, and has on it several forts. This point is the northern extremity of a narrow and crooked peninsula that bounds the E. and S. E. sides of Trincomale Harbour, and separates Back Bay from it, and from the Great Bay to the southward; and this peninsula being steep bluff land fronting the sea, is easily known, as the coast is low near the sea, both to the northward and southward.

The S. E. point of the peninsula, called Chapel Point, has some islets near it on the south side, called Chapel Island, and to the eastward a reef of rocks, distant a large ½ mile, nearly on the edge of soundings, having 20 and 30 fathoms very close on the east and south sides; on the inner part of the reef, one of the rocks is seen above water. Flagstaff Point is bold to, and safe to approach, but between it and Chapel Point, rocks stretch out from 2 small projections, which ought not to be approached under 14 fathoms.

* Captain Basil Hall, in 1814, made it in lon. 81° 21′ E. by stars east and west of the moon; and he made the variation of the compass, 1° 9′ W.

BOMBAY BRANCH OF THE ASIATIC

The S. W. point of the peninsula, called Elephant Fort Point, has an Island called Elephant Island, near it on the S. E. side, from which a reef, having 5 feet on its shoalest part, projects to the westward. Osnaburg Point, the westernmost point of the peninsula, is a little farther to the N. W. between which and Elephant Fort Point, there is a cove or safe harbour, with soundings in it from 8 to 14 fathoms.

The entrance of the inner harbour is not a ⅓ of a mile wide, formed by Osnaburg Point to the eastward, and Great and Little Islands to the westward, Little Island being the easternmost and close to the other. with the contiguous islands and points.

About ½ a mile south from Great Island, and 1 mile to the west of Elephant Island, Clapenburg Island is situated close to a point of the same name, and about a mile farther to the southward, is a point where the land is elevated a little, called Marble Point, with rocks projecting around it. This point forms the western extreme of the Great Bay, separating it from the entrance of the harbour, and affords a mark for going in. To the westward of Marble Point, there is an Island called Bird's Island, near the entrance of a Lagoon and shoal water: to the S. E. lies Pigeon Island, distant a large ½ mile, having 10 and 12 fathoms water close to, and Round Island nearly the same distance from the Point to the E. N. E., having 30 fathoms near it on the outside, then suddenly no ground. On the south side of this island there is a rock above water, and between it and Clapenburg Island, *but nearest the latter*, another, called Grummet Rock. The entrance leading to the harbour is formed by these islands and rocks to the S. W., and Elephant Island and Point to the N. E.

Four rivers navigable by small boats, fall into the south part of the bay, nearly at equal distances from each other. The bank of soundings lining the shores of the bay, extends very little outside the islets or rocks, except at the S. E. part, between the rivers Cotiar and Sambor, where ships may anchor in 10 or 12 fathoms regular soundings, soft mud, sheltered from easterly and southerly winds. Anchorage in the S. E. part of the bay.

The east side of the bay, is bounded by Norway Point to the northward, which is about 2 miles to the W. S. W. of Foul Point; Norway Island lies on the west side of the point, having a rocky reef encompassing it, and the islets near it and the point. From this point and the island, a sand bank stretches about a mile to the southward, with soundings on it 3 and 3½ fathoms, and 20 or 25 fathoms close to; to the westward of it, ¼ of a mile distant, there is no ground, but to the southward between it and the River Sambor, there is good anchorage near the shore. Norway Point and Island, and east side of the bay.

Norway Point, and Foul Point, must be avoided on account of the reefs projecting from them about ⅔ of a mile, nor ought the shore between them be approached, the soundings being irregular, and about half-way there is a very dangerous rock, distant from the shore about a mile, called Northesk Rock, from a ship of that name lost there in 1748. Northesk Rock.

Close to it on the outside, there are 12 and 14 fathoms, and 8 or 9 fathoms inside. When on it, Flagstaff Point bears N. 35° W., Norway Island S. 33° W., and a hill in the country touching with Marble Point W. 10° S., and Foul Point E. 10° N., it making a transit line with these points.

TO SAIL INTO THE BAY, AND TO THE HARBOUR, with a fair or leading wind, a ship may enter the bay, keeping nearly equal distance from each side; when Round Island and Marble Point are discerned, the Point ought to be kept about W. by S. ½ S., open to the northward of that island, until the harbour's mouth is open. No soundings will be obtained in the middle of the bay. When Round Island, or Elephant Island is approached, she ought to steer in about mid-way between them, and will then have soundings; after hauling to the N. W. for the harbour, care must be taken to give a birth to the reef, stretching from Elephant Island, by not coming under 10 or 12 fathoms toward it. When a ship going into the harbour, first opens the channel between Elephant Island and the main, How to proceed into the Bay and Harbour.

she is nearly abreast of that reef; when wide open, she is past it. On the hill on Osnaburg Point, there is a battery built with brick on the eastern part of the fortification, higher than any battery there, and easily distinguished. The flank of this battery kept on with Elephant Fort Point, would carry a ship close to the shoalest part of the reef, where there is only 5 or 6 feet: but the battery kept open with the point (which is the best mark) will carry her clear of it in not less than 10 fathoms.

There are 24 and 30 fathoms between the points that form the entrance of the harbour, and after passing the reef contiguous to Elephant Island, a ship should steer direct for it; although narrow, either of the points may be approached within a ship's length, and when through this narrow part, a spacious harbour appears, where a great navy may anchor in good ground, sheltered from all winds, exclusive of several coves, convenient for careening ships.

When within the entrance, it is prudent to steer to the N. N. W. to avoid the shoal within Osnaburg Point, and York Shoal farther to the northward. The former has only 11 feet water on it; with York Island and Flagstaff Point in one, and Pigeon Island and the low part of Osnaburg Point in one, a ship will be in 5 or 6 fathoms on it, and close to the shoalest part. It is small, with steep water all round; between it and the shore near Osnaburg Point, there is 7 and 8 fathoms.

York Shoal, has only 5 feet water on its shoalest part; to avoid it, a ship in steering up the harbour, must keep Round Island a little open with Osnaburg Point, but there seems no good land mark to point out when a ship is to the northward of it, that she may haul to the eastward for the anchorage abreast the town. When the Intrepid's boat was at anchor on its outer edge in 3¼ fathoms, within a ship's length of its shoalest part, Round Island bore S. ¾ E., seen over the low part of Osnaburg Point, the centre of York Island E. N. E. ¼ N., and the N. W. point of Great Island W. S. W. ½ W., nearly. With this bearing of Round Island, the shoal is not more than ½ a cable's length from north to south; and it is steep to all round.

Anchorage, &c. Ships may moor abreast of the town, to the N. Westward of York Island, or to the northward of Great Island, or in any other part of the harbour, clear of the shoals.

In the S. W. arm of the harbour, between Great Island and the point to the N. W. of it called Round Point, there is a Rock nearly mid-way, with 9 feet water on it, and not more than 3 fathoms in diameter, with from 7 to 9 fathoms all round. It is not in the way of ships, unless any should anchor in that part of the harbour, to cut wood in the S. W. monsoon. Round Point, bears from this rock N. by E. ½ E. and the N. W. point of Great Island S. ¼ E. When on it, the middle one of 3 windows in a long white barrack on Osnaburg Point, is on with the easternmost point in sight of Great Island, and a point of land near Clapenburg Cove open about a boat's length with the N. W. point of Great Island.

About 2 cable's lengths to the northward of the Grummet Rock, between it and the outer point of Clapenburg Island, lies the outer part of a ledge of rocks, with only 10 feet water on it, and 10 fathoms close to it on the outside; and it may be observed, that all the shoals in the bay, or in the harbour, are generally steep to.

To work into the bay. TO WORK INTO THE BAY WITH THE WIND FROM WESTWARD: observe, that when the wind blows strong from the westward, there is a strong outset from the southern part of the bay, rendering it difficult to work in at times during the S. W. monsoon; ships then bound to Trincomale, generally fall in with, or make the land to the southward of the bay. The reef projecting from Foul Point, about a ½ mile to the northward, is not very dangerous, as the depths decrease regularly to 4 and 5 fathoms close to its N. Eastern verge, and from thence the bank of soundings extends about 2 miles to the northward, where 36 and 40 fathoms are got on its northern extremity with Flagstaff Point bearing W. ½ N., and Foul Point S. ¾ E., the next cast no ground. In passing Foul Point, a ship may borrow into 14 fathoms; when about a mile to the northward of it, or when she opens Marble

Point to the northward of Round Island, bearing W. S. W. a little westerly, she may haul up for Flagstaff Point if the wind permit. For a considerable space between these points, no soundings are obtained in crossing.

To avoid the outset from the bay, a ship should work in, abreast of Back Bay and Flagstaff Point, which Point is safe to approach, close to it there being 15 and 16 fathoms. When well in with this land, care must be taken in rounding Chapel Point, to give a birth to the reef stretching from it about ½ a mile to the eastward, having from 30 to 50 fathoms close to it on the S. E. side, and no soundings about ¼ of a mile from it. In coming from the north towards it, a ship should not borrow under 18 or 20 fathoms, but the mark to clear it, is a white rock like the wall of a house, on the inside of the north point of Back Bay, called Elizabeth Point, kept about a sail's breadth open with Flagstaff Point. When round this reef, she may borrow on Chapel Island and the northern shore until past Elephant Island, which are all steep to, without soundings until very close to the shore, and no danger but what is visible. In standing to the southward, she ought not to borrow under 20 fathoms toward Northesk Rock, Norway Island, nor any part of the coast between it and Foul Point, where the bottom is rocky with irregular soundings; and Norway Island is surrounded by dangers. It is not advisable to stand farther to the southward than to bring Round Island on with, or just touching Marble Point, until she is well to the westward of Norway Island. With this mark on, she will pass clear of all dangers on that shore.

Being to the westward of Norway Island, she ought not to stand too soon to the south, toward the bottom of the bay, on account of the sand bank with 3 fathoms on it, extending about a mile to the S. S. W. of that island; having 15 and 16 fathoms within ½ a ship's length of it, and at a small distance no soundings. To pass clear to the westward of this danger, a great tree on the middle of the land forming Flagstaff Point, should be kept on with, or just touching Chapel Point, until the small island at the entrance of the lake is open to the southward of Pigeon Island; she will then be clear to the southward of all the dangers off Norway Point. If in standing to the southward, the tree open with Chapel Point, she ought to tack to the northward, to keep it on, or shut in with the Point, until past these dangers.

In approaching the bottom of the Bay, the lead must be kept going, for although there are no soundings within a mile of the shore in some places, the first cast may be 35 or 40 fathoms, then 18 or 20, and the next cast probably 10 or 12 fathoms. It would be imprudent to go under 12 or 14 fathoms, as the distance from these depths is not more than 1 or 2 cable's lengths in some places to 4 fathoms, at the distance of ¼ or ½ a mile off the shore; but to the southward of the bank stretching from Norway Point, in the S. E. corner of the bay, the soundings are more regular, and extend farther out, where ships may anchor, as has been already observed.

In standing to the northward for the entrance of the harbour, a ship may pass close to Round Island, it being steep to; from thence she will probably reach the harbour's mouth without tacking, and ought to keep close to the weather shore in entering it. After being within, she may anchor on the east or north side of Great Island, or where it may be most convenient.

BACK BAY, on the NORTH SIDE OF THE PENINSULA, which separates it from Trincomale Bay and Harbour, is about 4 miles wide, and 1 mile in depth, bounded by Flagstaff Point to the southward, and Elizabeth Point to the northward. The common anchorage is in the southern part of the Bay, in from 7 to 12 fathoms sandy bottom, with Flagstaff Point bearing from S. by E. to S. E. by S., distant ½ or 1 mile. Back Bay and anchorage.

The soundings decrease gradually to the sandy beach, except about 1¼ mile to the N. W. of the point, rocks project from the shore to 4 fathoms. Ships may lie secure in this anchorage during the S. W. monsoon, and procure supplies of wood and water. Buffalo beef

may be got, but vegetables or other refreshments are scarce. Ships of war sometimes go into the harbour to careen, or to escape the bad weather often experienced on the N. E. coast of Ceylon, and on the Coromandel Coast, at the commencement, or early part of the N. E. monsoon; but there being little trade carried on at Trincomale, it is seldom frequented by merchant ships.*

How to approach the land in either monsoon.

From September to March, a ship bound into this port should take care not to fall in with the land to the southward of Flagstaff Point, as the currents often run strong to the southward on the east coast of Ceylon during the N. E. monsoon. On the same coast, they are liable to fluctuate in the S. W. monsoon, though it is then prudent to fall in with the land, rather to the southward than to the northward of the port.

North part of Back Bay rocky.

Distant about 1¼ mile to the S. S. E. of Elizabeth Point, in the north part of Back Bay, there are several rocks under water, having 5½ or 6 fathoms close to them on the outside, and 5 fathoms within. Directly to the eastward of the same point, distant ¾ of a mile, 2 rocks are seen about the size of a boat, with others under water projecting from them about a ¼ of a mile to seaward; these are called Lively Rocks, having foul ground 7 and 8 fathoms very close to them, and should not be approached nearer than 12 fathoms on the east side.

Lively Rocks.

Other rocks, how to avoid them.

A ship being abreast of Elizabeth Point, and the Lively Rocks, ought not in coasting to the northward to come under 18 fathoms, on account of several sunken rocks situated between that point and Pigeon Island, which are dangerous to ships making too free with the shore. Two of these rocks bear about N. ¾ W. from Flagstaff Point, and S. S. E. ½ E. from Pigeon Island, nearly midway between these places, distant about 2 miles from the shore, and lie near each other. The ship, Fairlie, struck on the southernmost rock in 1797, and found it about 20 fathoms in diameter, with 16 feet water on it, and from 9 to 11 fathoms close to it, all round. H. M. S. Diomede struck on the other, thought to be about ½ a mile farther to the northward, and after getting off, sunk about 3 miles to the northward of Flagstaff Point; the depths close to the Diomede Rock were 9, 10, and 11 fathoms, by which it seems probable, that the Fairlie Rock and it are the same, although they are generally considered as different rocks.

Pigeon Island and rocks.

PIGEON ISLAND, in lat. 8° 42′ N. bears about N. by W. ¾ W. from Flagstaff Point, distant 3 leagues, which is a rocky island with some shrubs on it, encompassed by islets and rocks above and under water, with others between it and the shore, where there is no safe passage except for boats. Although it may be approached to 16 or 18 fathoms on the outside, it is adviseable to pass at the distance of 1½ or 2 miles from it, in soundings from 21 to 24 fathoms.

Bank of soundings.

The bank of soundings between Flagstaff Point and Pigeon Island, seldom exceeds 3 or 4 miles distance from the shore, and from 40 or 42 fathoms, it has a steep declivity in most places to no ground.

Hills and adjacent coast.

On the north side of Back Bay, a little inland, there is a hill of a conical form, and another hill to the N. W. of Pigeon Island, called Mount Erasmus, having on it a tower or pagoda; but the land facing the sea, is low.

* Exclusive of the difficulty of procuring vegetables and other articles of refreshment at Trincomale, it is generally considered an unhealthy place, occasioned by the low marshy surrounding land.

The land winds are very noxious to Europeans who sleep on shore, exposed to them in the night: many seamen of H. M. Fleet, under the command of Admiral Hughes, by exposure to these winds, were seized with spasms, which generally ended in a speedy death.

# *NORTH-EAST and NORTH COAST of CEYLON,*

## FROM FLAGSTAFF POINT TO POINT PEDRO; WITH SAILING DIRECTIONS.

To sail from Trincomale to the northward.

A SHIP leaving Trincomale, or being abreast of Flagstaff Point in the S. W. monsoon, and bound to the southern part of the Coromandel coast, should continue to keep near the N. E. coast of Ceylon, as the wind frequently hangs far to the westward, and blows fresh over the northern part of the island. A course about N. by W. if near to Flagstaff Point, will be proper, until she is clear to the northward of Pigeon Island, taking care not to borrow under 22 or 24 fathoms in the night, nor under 18 or 20 fathoms in the day, toward that island, or toward the Diomede and Fairlie Rocks, to the southward.

Geo. site of Molewal, coast adjacent.

MOLEWAL, OR MOLATEEVA HOUSE, in lat. 9° 13′ N. lon. 81° 1′ E., stands close to the sea, and bears about N. W. by N. from Pigeon Island, distant 13 leagues; the coast between them is low, and safe to approach to 18 or 20 in the night, if the lead is kept going, or to 12 fathoms occasionally, when working in day-light. About 3½ leagues from Pigeon Island, there is a small river, and 4 leagues farther to the N. W. the river Cocklay is situated.

Molewal Shoal.

From Molateeva House, a Dangerous Coral Shoal, having only 2 fathoms water on it, called MOLEWAL SHOAL, extends to the eastward and N. Eastward near 4 miles from the shore, which ought not to be approached nearer than 13 fathoms. As there are 20 and 21 fathoms water about 4 miles from the shore,* and 4 or 5 miles to the S. Eastward of the shoal, a ship should edge out a little when near it, but when abreast of its eastern extremity, she may with the land wind, borrow toward it to 13 or 14 fathoms. The north side of this shoal is not so steep, but composed of detached knowls, the depths decreasing regularly to 9 or 10 fathoms close to its northern verge, and to 6 and 7 fathoms along the N. W. part, close to the shore. From this shoal to the N. E. point of Ceylon the shore is low, with a sandy beach, and 7 fathoms water very close to it; but care is requisite to avoid POINT PEDRO SHOAL, that encompasses the N. E. extremity of the island, and from thence stretches nearly parallel to the coast about 6 leagues to the S. S. Eastward, having only 3 and 3½ fathoms on it in many places, and 2½ fathoms on two patches; one of these bears nearly E. ¾ S. from Point Palmyra, the N. E. extreme of Ceylon, distant about 5 miles; the other, N. E. from the same point, distant 4 miles.

How to avoid it.

Point Pedro Shoal, opposite coast, and channel between them.

Between this extensive (though narrow) shoal and the coast, there is a safe channel about 3 miles wide, with regular soundings, soft mud, 7 fathoms close to the shore, 7, 8, or 9 fathoms in mid-channel, and 5 or 6 fathoms close to the inner edge of the shoal. To the eastward of it the bank of soundings is also flat, with regular depths, decreasing to 5 and 6 fathoms close to the S. E. and eastern parts of the shoal, and to 4 fathoms coarse brown sand close to its N. Eastern verge.

A survey made of this part of the coast.

Captain P. Heywood, in August, 1802, worked round the south end of Point Pedro Shoal, in H. M. S. Leopard, and passed between it and the coast, through the Inner Channel to Point Pedro village; here, he remained some time, and with the assistance of the Providence schooner, completed a laborious survey of Point Pedro Shoal, and the banks of soundings contiguous to the north end of Ceylon; which survey had previously been begun, and carried on from Molewal Shoal, by Mr. Duncan Weir, master of H. M. S. Suffolk.

* H. M. S. La Sensible, ran on shore under a press of sail about 3 leagues to the southward of Molewal, and was wrecked on the steep beach, occasioned by an error in the *dead reckoning*, the effect of a westerly current.

TO PASS INSIDE OF POINT PEDRO SHOAL, Capt. P. Heywood of the R. N. gives the following instructions. Ships coming from the southward, and intending to pass between Point Pedro Shoal and the coast, after passing Molewal Shoal in 12 or 13 fathoms, ought to observe, that the coast from thence takes a direction about N. W. by W., but it is not advisable to haul in for the land nearer than 9 fathoms, until in lat. 9° 28′ N., between which lat. and the south tail of Point Pedro Shoal, there are good soundings from 9 to 6 fathoms, the nearer the shore, the more regular.

To pass inside of Point Pedro Shoal in coming from southward.

Should the wind hang at N. W., making it necessary to beat, come no nearer the tail or inner edge of Pedro Shoal than 6 fathoms, but to the shore you may borrow by distance, as it is steep to, all along, with 7 fathoms at the distance of 1 or 2 cables' lengths.

If the wind is free, when in lat. 9° 28′ to 30′ N. *steer in west*, to get sight of the house which bears S. 40° W. from the south point of Pedro Shoal, and when seen, is an excellent mark for entering the channel, but at present it is so dark coloured, and being somewhat lower than the land and trees behind it, is with difficulty discerned till very near. With this west course, you will carry generally more, but never less than 6 fathoms close in to the shore, along which you may steer at any convenient distance, as the wind may be, until you raise PALMYRA POINT, which is the N. E. point of Ceylon, remarkable by high Palmyra trees growing on it, rendering it conspicuous when seen either from the S. E. or N. W., and it is in lat. 9° 49′ N. and 58 miles west of Trincomale flagstaff, or in lon. 80° 26′ E. From this point, a small breaking reef projects about a ¼ of a mile; the Leopard rounded it in 7 fathoms at the distance of ½ a mile, and anchored in that depth, with the village of Point Pedro bearing S. 21° W., and Palmyra Point S. 41° E. The village is between these points, which bear about E. ¼ S. and W. ¼ N. from each other near 3 miles, Point Pedro being the northernmost part of the island; from hence, the coast extends to the N. W. point of the island W. ¼ S. 15 or 16 miles. This north coast of Ceylon is steep to, all along, with 6 or 7 fathoms close to the shore, between which and the banks, there is a fine channel from 3 or 4, to 9 miles wide, with regular soundings from 7 or 8, to 5 fathoms over a bottom of blue mud.

Geo. site of Palmyra Point.

Village.

North coast of Ceylon steep to.

SHIPS coming from the southward, and intending to round outside of Pedro Shoal, after passing the south point of it, should not borrow on its outer edge to less than 8 or 7 fathoms, till in lat. 10° or 9° 58′ N., when they may haul round to the westward, observing to keep *that depth* good, until Palmyra Point bear S. W. by S.; *then, if the wind be free*, may steer for a very remarkable gap or vacancy in the trees, shoaling gradually to 5 fathoms, from coarse sand intermixed with shells and red coral, to very fine white sand, of which the 5 fathoms bank is composed. This gap in the trees should, if possible, be brought *to bear south* in 6 *fathoms*, before you shoal on the bank to 5, and if kept on that bearing, there is not less than 5 fathoms quite across the bank. Having deepened over it to 6 fathoms muddy bottom, in the channel, any part of the coast may be steered for direct.

To round Point Pedro Shoal on the outside;

If the wind be from the southward or S. W. when a ship has rounded Pedro Shoal, with Palmyra Point bearing S. S. E. or S. E. by S., and in 6 or 7 fathoms, she will not wind better than W. or W. N. W., she may stand on, along the 5 fathoms bank till the gap in the trees bear S. S. E. ½ E. but *no farther*, because N. W. by N. from the gap, and west of the 5 fathoms line of soundings, lies the eastern verge of a hard sand bank, with only 3 and 3½ fathoms on it, from which Palmyra Point bears S. 48° E. 14 or 15 miles, and the N. W. point of Ceylon S. 9° W. 11 or 12 miles: From this tacking position, if the wind permit, you may steer for the gap, (as before directed) or haul to the wind again on the starboard tack, and stand to the S. E., or E. S. E. and E., till Palmyra Point bear S. E. by S.; but if you have laid up well to the southward, and *deepened over the 5 fathoms bank* to 6 or 7 fathoms muddy soundings, you may bring it to bear S. S. E. with safety. Another

And proceed to the north shore of the island.

good turning mark while in 5 fathoms, is the gap from S. by W. ¼ W. to S. S. E. ½ E., which space formed by that angle *on* and *across* the bank, has not any less water than 5 fathoms.

How to proceed in coming from Point Calymere.

SHIPS coming over from Point Calymere toward the north coast of Ceylon, or being bound to the anchorage at Point Pedro village, should pass the former point in about 9 fathoms, and from this depth, with the Pagodas bearing west, if there is not any current, a S. S. E. course will take them into 6 or 5½ fathoms in sight of the gap bearing south, when they should follow the foregoing directions.

The gap described;

The gap is about 6 miles to the westward of Palmyra Point, and in coming from the eastward it begins to open bearing S. by W. Westerly; as the north coast of Ceylon on both sides of it is luxuriantly cloathed with the Palmyra Tree, it seems probable that the gap has been made by the Dutch, that the vacant space might answer as a pilot's mark to *themselves*, without it appearing such to strangers; for it is very conspicuous, and in the most eligible situation for that purpose. At a small distance to the eastward of it, there are two very small vacancies in the trees, which a stranger might *at first* mistake for the true one; but to distinguish the true gap, observe, that when in 5 or 6 fathoms it bears S. by W. there is a single Palmyra tree detached from the rest appearing in the middle of it, between which and Point Pedro, (the north point of the island) the two *false vacancies* are situated: but they are so small in comparison of the true one, when seen *together*, that they cannot be mistaken.

And two false ones.

To sail from Point Pedro Village.

Ships leaving the anchorage at Point Pedro village to go to the northward, should steer about N. W. ½ N., or so as to bring the gap to bear south when in 6 or 5½ fathoms white sand on the southern edge of the bank, then a north course will carry them over it in 5 fathoms, and the depth of water when the land begins to sink with the eye elevated 24 or 25 feet will be 7 or 8 fathoms, the bottom coarse sand mixed with coral.

How to cross from the east coast of Ceylon to Point Calymere in the S. W. monsoon.

SHIPS bound from the east coast of Ceylon to the Coromandel Coast, after passing Molewal Shoal, may steer along the bank of soundings, taking care not to come under 9 or 10 fathoms in the night until in lat. 10° 0′ N., being then clear to the northward of Point Pedro Shoal, they may borrow into 8 or 9 fathoms occasionally, in crossing over to Point Calymere, which bears from Point Palmyra about N. W. ½ N., distant 13 leagues. From 10 to 20, or 25 fathoms, are good depths to preserve, in passing from Molewal to Point Calymere in the S. W. monsoon; the depth will decrease considerably abreast of Point Pedro Shoal, and to the northward of it, in steering a direct course between them, but there is no danger, if a ship do not come under 9 or 10 fathoms.

If a ship borrow under 15 fathoms, attention to the lead will be requisite in crossing, as the current sometimes sets to the westward in the S. W. monsoon, into Palk's Bay, formed between the north part of Ceylon and the continent. When a ship is bound to Madras, or farther to the northward, she need not be particular in borrowing so close to the Points Palmyra and Calymere, but it is prudent to keep in soundings, and she ought to be certain to make the Coast of Coromandel well to the southward of her port of destination, for the current frequently sets very strong to the northward along that coast in the S. W. monsoon.

Although the current during the S. W. monsoon, sometimes sets into the bay between the continent and the north part of Ceylon, it is more frequently found to set in the opposite direction to the eastward, rendering it prudent to keep within a moderate distance of the land; for if a dull sailing ship should happen to round the east side of Ceylon at a great distance in the strength of the S. W. monsoon, she would probably not be able to make the coast until to the northward of Madras, which has often happened when ships were navigated by dead reckoning.

# *PALK'S BAY; WINDS and CURRENTS on the EASTERN COAST of CEYLON.*

## DIRECTIONS TO APPROACH OR DEPART FROM IT IN THE N. E. MONSOON.

Palk's Bay, THIS BAY, OR GULF, situated between the continent and the north part of Ceylon, named after Governor Palk, by the Dutch, is not frequented except by boats and small coasting vessels; the water being shoal generally all over it, from 6 or 7 fathoms in some places, to 4, 3, and 2 fathoms toward the main, renders the navigation unsafe for large ships. It is bounded by Adam's Bridge to the southward, and by Calymere Point and the Coast of Tanjore to the northward; the Dutch describe *three* channels formed between that point and Strait. and the north end of Ceylon, which lead into Palk's Bay; but the southern channel, called Palk's Strait, contiguous to the north Coast of Ceylon, is probably the only one that may be considered safe for large ships.

Directions have been already given for sailing to the north part of the island through this channel, by using the gap in the trees as a guide; and it is about 3 leagues wide from the N. W. point of Point Pedro Shoal, across the 5 fathoms bank in a W. by N. direction to a bank of 3 fathoms sand, which bounds it on the N. W. side. This 3 fathoms bank bears N. W. by N. from the gap in the trees, distant 3 leagues from the nearest part of Ceylon, having regular soundings 6 and 7 fathoms between it and the island, till close to the shore; and the 5 fathoms bank, of an elliptic form, occupies the space between it and the north end of Point Pedro Shoal.

Kelsal's Channel; The second channel, called by the Dutch Kelsal's Channel, nearly mid-way between Point Calymere and Ceylon, formed by the 3 fathoms bank to the S. E. and an extensive bank to the N. W., is about 6 or 7 miles wide, the depth of water in it from 4 to 5 fathoms; there are no marks for sailing through, it being too distant from the land. The bank that bounds this channel on the northwest side (sometimes called the Middle Bank) has on it 3 and 3½ fathoms hard sand; it extends from lat. 10° 7′ to 10° 17′ N. being upward of 3 leagues in length about N. N. W. and S. S. E., and nearly joins to the shoals and other narrow channels. which project from Point Calymere. Between these and the bank, *there is said* to be a passage 5 or 6 miles wide, called Baker's Channel, with 4½ fathoms water in it, whereas, there are only 2 or 3 narrow guts from ½ to 1 mile wide, the deepest water in them 4 fathoms, and 3 or 3½ fathoms between them, the bottom all hard sand; the passage, therefore, in this part, seems safe only for small vessels.

Shoal water around Point Calymere. From Point Calymere, shoal water projects far out all round, but the depths decrease gradually towards it; about 4 miles from it on the east side, there are 3½ and 4 fathoms, and 6 miles to the southward of it only 3 or 3½ fathoms, to the westward of the long middle bank, and the narrow guts above described.

North coast of Ceylon. From Point Palmyra, the N. E. point of Ceylon, Point Pedro,* the northernmost part of the island, bears W. ½ N. about 3 miles, situated about mid-way between the former point and the gap in the trees, and the village is about mid-way betwixt those points. From Point Pedro, the north coast of Ceylon extends W. ½ S. and W. by S. about 5 leagues, which is low, covered with Palmyra trees; the soundings along it, are regular from 7 fathoms within 2 or 3 cables lengths off the shore, decreasing to 4½ fathoms about 3 leagues off, on the edges of the banks which bound the northern side of Palk's Strait.

* This has in general been called the N. Easternmost point of the island, in former works.

THE DUTCH DESCRIPTION, of the navigation of Palk's Bay, (practicable in some places only by small vessels) is nearly as follows. Hamenhiel fort stands on a small island, among other larger islands situated near the N. W. part of Ceylon. When 5 or 6 leagues to the westward of Point Pedro, you perceive Valy Point, to which you must give a birth of 3 leagues on account of a bank with only 3 fathoms upon it; the N. W. point of Ceylon must be passed before Hamenhiel Fort is perceived, and when this point bears S. E. by E. the island will bear from S. by W. and S. S. W., you may then steer towards it, bringing the fort to bear S. by E., and anchor in 4½ or 4 fathoms. In May, June, and July, the S. S. W. winds are very violent in these parts, and the tides strong. Dutch account of the navigation of Palk's Bay.

JAFANAPATAM, in lat. 9° 43′ N. is 5 leagues to the eastward of Hamenhiel; the channel is within the islands, and having but 4 feet water in some places, is only frequented by the country boats, although there is a considerable coasting trade carried on with this place. Jafanapatam.

From Jafanapatam to Calimony Point, the course is E. S. E. 3 leagues, the depths of water only 12 or 13 feet; near the point there is a rock, with only 3½ feet water upon it. The anchorage at Calimony, is in 3½ fathoms about 2 miles off shore. Calimony.

POLAN-DIVA, called also Cat Island and Enkhuysen, is small, and lies 3 leagues S. W. by S. from Calimony Point; a sand bank projects from the island about a mile, and the depths are 5 and 6 fathoms fine sand, in the fair way between these places. and Polan-Diva.

TWO BROTHERS, are small islands about S. S. W. from Polan-Diva, distant 2 or 3 leagues; they should not be approached nearer than 2 miles, on account of a rocky reef stretching out to the westward. Two Brothers.

MANAR ISLAND, the east part, is 6 or 7 leagues to the southward of the Two Brothers; near the latter, in the fair way, the depths are 5 and 6 fathoms, decreasing much toward Manar, on approaching which the Portuguese Church called Madre de Deos, will be seen; when this bears S. W., a small vessel may borrow into 10 or 12 feet water within ½ a mile of the shore. Manar Island.

Manar is of considerable extent, and from its west end, the distance is about 8 or 10 leagues W. by N. to the Island Ramisseram, but a vessel must steer first N. W. by N. 6 or 7 leagues to get into 6 fathoms ouze; in approaching the N. E. point of the latter island, the lead should be kept going, for when in 5 fathoms the depth decreases ½ a fathom at each cast.

CATCHE-DIVA ISLAND, lies E. N. E. 4½ leagues from the N. E. point of Ramisseram, and 4½ leagues farther on the same bearing lies Cow Island, called also Delft Island, which is the westernmost of the islands at the N. W. part of Ceylon; it is about 7 miles long, and bears S. W. by S. from Hamenhiel Fort; the depth in the fair way, between these islands, is 6 or 7 fathoms. Catche-diva Island, and Cow Island.

From Hamenhiel Fort, the town of Devipatam, on the opposite side of Palk's Bay, is distant about 20 leagues to the W. S. Westward; about 6½ leagues from the fort, there is a sand bank having on it only 9 or 10 feet water, and in approaching the main, attention to the lead is requisite, as the depths are only 2½ and 2 fathoms, 5 or 6 miles from the shore; the whole of the coast bounding the west side of the bay, is lined with shoal water from Devipatam to Point Calymere. Hamenhiel & Devipatam.

DURING THE N. E. MONSOON, the current frequently sets to the S. Westward into Palk's Bay, between Point Calymere and Ceylon; ships, therefore, which are bound

To pass from Point Calymere to the coast of Ceylon.—Currents and winds.

from the southern part of the Coromandel Coast to Trincomale in this season, should be cautious to keep well to the eastward in crossing, that they may prevent being drifted near the shoals off the north end of Ceylon. Gales of wind, blowing directly upon the shore, are sometimes experienced in November, December, or January,* rendering a close approach to the N. E. side of the island, dangerous at such times. Several vessels have been driven on shore and wrecked by these gales, but they are not frequent.

Gales from N. Eastward blow at times on the N. E. coast of that island.

In the Carron, we left Madras on the 6th January, 1795, bound to the Malabar Coast, and carried a strong N. E. and E. N. E. wind with cloudy weather, which deprived us of sights of the sun or stars, for latitude or chronometers. On the 8th, at 2 P. M., we steered S. W. by S. to get a sight of Ceylon before night, and soon saw Flagstaff Point bearing W. distant 5 or 6 miles, with the surf breaking high on the rocky shore; the weather being dark and cloudy at the time, a hard squall followed, which increased to a strong gale in the night, with frequent squalls and rain. After dragging along shore to the S. Eastward for several hours in 28 and 30 fathoms, we shoaled into 24 fathoms and wore, finding we could not clear the coast on the larboard tack, but on the starboard tack we deepened our water and cleared the coast. The ship was at this time in excellent trim, sailed remarkably well upon a wind in beating off against a heavy sea, although under a low sail; an indifferent sailing ship, would, *most probably*, not have been able to beat off shore; it is therefore, prudent, for ships bound to the southern part of Ceylon in December and January, when the weather looks threatning, not to come close to the island until they get into the latitude of its eastern-most limit, from 7° 20′ to 7° North.

Lord Thurlow got on point Pedro shoal, owing to a westerly current.

The Lord Thurlow, and Rodney in company, left Madras 26th February, 1796, bound to the southward; at 5 A. M. 2d March, steering S. S. E. the Thurlow grounded on the northern extremity of Point Pedro Shoal, and made the signal, the Rodney immediately tacked, touched the ground in stays, and when about had 4¾ fathoms hard sand. Not apprehending themselves so near the land they did not sound, but when observations were taken at noon they found a current had set them considerably to the westward, and made the part of the shoal on which the Thurlow grounded 5 miles to the eastward of Madras by chronometers, and in lat. about 9° 57′ or 58′ N.,† distant from the shore 7 miles.

In Oct. and Nov. unsettled weather, with a southerly current.

In October and November, the weather is often very unsettled, with squalls, rain, light baffling winds, and frequent calms along the N. E. and East coast of Ceylon, with strong currents running to the southward; ships bound to Trincomale in these months, or at any time in the N. E. monsoon, should endeavour to get into soundings to the northward of that port, to prevent being carried past it by the currents.

Instances of its strength.

On the 28th November, 1796, a squadron of the Company's ships‡ left Madras bound to Trincomale, had light northerly winds and calms with a current running strong to the southward, which carried them to the southward of the Basses. On the 15th December, they were in lat. 6° N., no land in sight, the southerly current then abated, and with the wind at E. N. E. and N. E. they reached Trincomale on the 20th, after a passage of 22 days from Madras.

In October and November, a strong current may always be expected to set along the east side of the island to the southward, when the wind is from the northward, or when it is light and variable. Off the Great Basses, it then sets to the southward at times 1½ and 2 miles an hour; at other times it is weak, and follows the direction of the land to the westward as far as Point de Galle, or even to Colombo; this has also been experienced in March, when the winds were faint and variable.

* His Majesty's Ship Sheerness, and two other ships, in Trincomale Inner Harbour, were driven on shore and wrecked in one of these severe storms. It commenced at sun-set, 7th January 1805, in a dreadful hurricane at N. W., with heavy rain, and shifted suddenly to N. E., when they parted all their cables and drove on shore.

† Captain Heywood, in his survey of the shoal, makes the northern extremity in lat. 9° 56′ N.

‡ Asia, Manship, Goddard, Camden, Pitt, and Lord Macartney.

The southerly current that runs along the east side of the island during the N. E. monsoon, is generally deflected from the shore to seaward about the Great Basses; and at the S. W. part of the Island near Point de Galle, it sometimes sets off shore, but seldom very strong.

When the wind blows strong along the shore on either coast, the current is generally governed by it, and runs strong to the eastward along the south side of the island with the steady winds which prevail in the westerly monsoon; but in this season, on the eastern coast, the winds, although variable, are generally from the land, and a drain of current often sets to the southward between the Friar's Hood and the Basses. The current runs with the wind, when the latter is strong.

The high land is often enveloped in clouds, by the great quantity of vapour with which this island is generally covered, and from heavy dense clouds, severe squalls blow at times from the land, which require caution, as they give very little warning. These squalls are most liable to happen at the changing of the monsoons, or during the strength of the S. W. monsoon. Sudden squalls from the land at times.

Ships bound from the Malabar Coast to Bengal, or the Coromandel Coast, in the N. E. monsoon, generally work along the south coast of Ceylon to the Great Basses, or farther when it is practicable, then stretch off to the eastward into the open sea, where they meet the monsoon steady, and get clear of the southerly current, running along the east side of the island during the strength of the monsoon. To proceed from Ceylon toward Bengal or the Coromandel Coast in the N. E. monsoon.

In standing across the bay to the eastward, a westerly current is generally experienced,* particularly within 20 or 30 leagues of Ceylon; it is, therefore, prudent, to stand off several degrees from the island, and then take the advantage of favorable shifts of wind to work to the northward in the middle of the Bay, where brisk gales from the southward, of short duration, are *at times* liable to happen, even in the strength of the N. E. monsoon, although not always to be expected.

In the latter end of February, or in March, when the force of the N. E. monsoon is abated, there is at times, little southerly current running along the east coast of Ceylon; in March, it sometimes sets weakly to the northward, with a kind of night and day winds, similar to land and sea breezes; ships, should, therefore, after reaching the Basses in this month, continue to work round the east side of the island, if the winds are moderate, and the current not strong against them.

When they reach the easternmost part of the coast about Aganis, the winds and currents may be expected more favorable for getting to the northward than they are at the S. E. part of the coast about the Basses; and on the southern part of the Coromandel Coast, a favorable current setting along shore to the northward, is almost certain in March, with light favorable breezes for proceeding up the Bay. If N. E. winds are encountered off the S. E. part of Ceylon, a ship ought to stand to the eastward into the open sea, where the wind will most probably become variable at N. W. and Westward.

* Some ships after making several degrees of easting from the land about the Basses by the reckoning, have unexpectedly got sight of the Island again.

# *COAST OF COROMANDEL.**

## DESCRIPTION OF THAT COAST, FROM POINT CALYMERE TO MADRAS, WITH SAILING DIRECTIONS.

To sail from the north part of Ceylon towards Negapatam in the S. W. monsoon.

A SHIP being in 18 or 20 fathoms water, abreast of Point Pedro Shoal, and bound to Negapatam in the S. W. monsoon, may steer N. W. by N. 8 or 10 leagues, taking care to keep in soundings; should the water deepen after having run a few leagues to the northward of the head of the shoal, she ought to haul more to the westward, and keep in from 12, or 14, to 16 fathoms; for the wind often draws to west, and sometimes to W. N. W., with a strong current running to the northward, rendering it difficult to get near the land between Point Calymere and Negapatam, when a ship is far out in the offing. If she pass in sight of the low land about Point Calymere, it will be proper in a large ship, not to come under 6 fathoms toward the reef or shoal flat projecting from that Point, and she will in this depth, pass the point at the distance of $2\frac{1}{2}$ or 3 leagues. She may afterward steer along the coast in 8 fathoms, which will carry her outside of the $3\frac{1}{2}$ fathoms shoal, situated to the southward of Negapatam, and when the white house, situated about 5 miles to the southward of that place, bears west southerly, she is clear of its northern extreme, and may haul in for the road, and anchor in 5 or $5\frac{1}{2}$ fathoms.

Point Calymere.

Geo. site, description of the coast,

POINT CALYMERE, in lat. 10° 18′ or $18\frac{1}{2}$′ N., lon. 79° 58′ E., is low, and covered with cocoa-nut trees, and ought not to be approached under 5 or 6 fathoms; the two pagodas, called Point Calymere Pagodas, in lat. 10° 23′ N. lon. 80° 0′ E., stand near each other, about a mile from the shore, and 6 or 7 miles to the N. N. Eastward of the southern extremity of the point. From these pagodas, the direction of the coast is about N. $\frac{1}{2}$ W. to Negapatam, the distance 20 miles; all the land in this space is low, and planted with cocoa-nut trees near the sea. In lat. 10° $28\frac{1}{2}$′ N. about 6 miles to the northward of the two Pagodas there is a remarkable tall cocoa-nut tree by itself, and 3 miles farther, a *tuft* of the same trees much higher than the rest, which bears due west from the south end of Negapatam Shoal.

marks for Negapatam shoal.

In lat. 10° 36′ N., about 5 miles to the northward of the tuft of trees last mentioned, there is a clump of thick bushes, or small trees, a little elevated, which is the first thing seen in making the land from the S. Eastward; and it rises in the form of a saddle, when viewed from 17 or 18 fathoms water, 5 or 6 leagues off shore. This *saddle bush*, is at a small distance from the sea, and about $1\frac{1}{2}$ mile to the S. S. W. of a sand hill near the beach, which has on it some cocoa-nut trees, and bears due west from the north end of Negapatam Shoal; close to the sand hill on the north side, a *white* house is perceived among the trees near the beach, which is also a mark for the north end of the shoal.

Description of this Shoal,

NEGAPATAM SHOAL, extends nearly north and south about $6\frac{1}{2}$ or 7 miles, and is little more than 2 cable's lengths across on any part; it is composed of hard sand and stones, having from 24 feet on its south part to 19 feet at the north end. About mid-channel between it and the shore, the depths are from $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms, and 5 fathoms close to its inner edge. The south extremity of the shoal is distant from the beach about 3 miles, and the north end about 4 miles distant from the same.

and how to avoid it.

The depths close to the shoal on the outside, are 6 and 7 fathoms, and a ship bound to

* The whole extent of coast, from Point Calymere to Ballasore, is generally implied under this name, although it properly belongs only to the southern part; the coasts of Golconda, and Orixa, form the other parts to the northward.

the northward ought not to come under 7 fathoms until to the northward of the Sand Hill and White House among the trees near the beach, or until Negapatam Flagstaff, or the Black Pagoda, bears N. W. ½ W. or N. W. by W.; she may then haul in over some knowls that lie near the head of the shoal, and if the flagstaff bears at all to the northward of N. W. ½ W., will have overfalls of 7 to 5 fathoms on them. From 21 feet water on the north point of the shoal, Negapatam Flagstaff bears N. 45° W. distant 8 miles, and the sand hill west.

The common anchorage at Negapatam during the fair season, is in 5, or 5½ fathoms, soft ground, with the flagstaff about W. or W. by S., off shore 1½ or 2 miles. When the weather is unsettled, it will be prudent to anchor out in 6 or 7 fathoms, with the flagstaff W. ½ S., and the highest of the Five Pagodas N. W. or N. W. ¼ N., good holding ground. Anchorage.

Fresh provision for present use may be got here, with vegetables and fruit, and also rice, but firewood is a scarce article. The watering place, is at a great tank, about ½ a mile up the river; ships generally employ the country boats to bring off water, as it might be tedious and dangerous to use their own, on account of the surf, which breaks high on the bar when there is any swell. The rise of tide on the springs, is about 3 feet; high water about 5 hours on full and change of the moon. and refreshments at Negapatam.

NEGAPATAM FORT, is in lat. 10° 45½′ N. lon. 79° 55′ E., by the trigonometrical survey of Major Lambton; and the town lies to the northward of it, near the entrance of a small river capable of receiving small country vessels, which has a north and south entrance, the land between them being an island; the boats use the windward entrance in passing out, and the leeward one to return according to the monsoon.* A considerable trade is carried on at this place by small coasting vessels. Geo. site.

About 1½ mile N. N. W. from the Fort stands the old ***Black*** Pagoda, which is one of the objects most conspicuous in approaching this part of the coast, the whole of it having a low drowned aspect when first seen from the offing, and is in general a sandy barren soil, planted with cocoa-nut trees in many places. Black Pagoda.

FIVE ***WHITE*** PAGODAS OF NAGORE, are in lat. 10° 49′ N. distant about 4 miles from Negapatam, or 3 miles from the ***Black*** Pagoda, the direction of the coast between them being nearly true north. These ***White*** Pagodas are excellent sea-marks for distinguishing Nagore River, situated close to them on the north side, where a great trade is carried on in piece goods, rice, &c. There is 8 feet on the bar at high water during the springs, when the rise of tide is about 3 feet, and flows to 8¼ hours. Several vessels of 2 and 3 hundred tons burthen belong to this place, and are navigated by natives, who conduct them to the west coast of Sumatra, Achen, Malacca Strait, and other parts on the east side of the Bay of Bengal, where they have a constant trade. The anchorage in the road at Nagore, is 2 or 3 miles off the entrance of the river, in 5 or 6 fathoms, with the five ***White*** Pagodas W. S. W. or W. by S. The coast is low, and at times inundated near the mouth of the river. Five White Pagodas of Nagore. And anchorage.

TRANQUEBAR, in lat. 11° 1½′ N. lon. 79° 55′ E., bears north a little westerly from Nagore, distant about 4 leagues; between them, lie several small rivers; that of Karical, about 1½ or 2 leagues from Tranquebar, may be known by a bushy tree near it: ships may anchor abreast of this river in 5 or 6 fathoms, but the entrance is not easily perceived, being formed by a narrow point of sand extending along the coast; the opening is to the northward, Geo. site of Tranquebar, rivers adjacent.

* There is reason to think, the entrance of this river is liable to change, for it runs parallel to the shore near ¾ of a mile, and not more than 100 yards from the sea, having between them only a low bank of sand. The proper entrance is at present, to the northward of the town, and the bar is tolerably smooth in fine weather, when ships boats may go over it into the river; but they cannot land any where else, on account of the surf.

nearly parallel to it, which is the case with most of the rivers hereabout. To the southward of Karical river about a mile, is Coluncherry river; and between this and Nagore, Tiroomale river is situated: the bars which occupy the mouths of these small rivers, render them navigable only at high water by boats, or the small country vessels called Chilingas. Tranquebar is easily known, by the fort and houses having a neat appearance, and are generally very white.

Soundings. In coasting along from Negapatam to Tranquebar, the shore may be approached to 6 fathoms; the depths are 5 fathoms about 2 miles off, 7 fathoms about 3 miles, and 12 fathoms about 6 miles off shore. In passing the river at Tranquebar, a ship ought not to come under 6 or 7 fathoms, on account of a bank projecting to a small distance from the shore.

Coast from Tranquebar to the northward. From Tranquebar the coast extends nearly north about 7 leagues to the entrance of Coleroon or Kolram river, and may be approached to 6 or 7 fathoms regular soundings, but 10 or 11 fathoms are good depths to preserve in coasting along. To the northward of Tranquebar at 2 leagues distance lies the village Caverypatam, in lat. 11° 8′ N. close to the mouth of the river called New Cavery, and near it, 2 small pagodas stand at a little distance from the shore.

The small river Tiroomale Washil, (taking its name from a pagoda that is seen inland) is about 2 leagues to the northward of Caverypatam, having a bank stretching near a mile from its mouth, but as the depth in the approach to it gradually decreases, it is not dangerous. The land to the northward of this river, is rather higher than the coast to the southward, which from Point Calymere is all very low, and only discerned from the offing by the trees and buildings.

Bank of soundings. On the southern part of the coast, the bank of soundings is very flat to 20 fathoms about 5 leagues off; but from 70 fathoms about 8 or 8½ leagues from the land, it has a steep declivity to no ground 100 fathoms. To the northward of Nagore, soundings do not extend so far out, the depths from thence, being generally 40 or 45 fathoms about 5½ or 6 leagues off shore, and the bank shelves suddenly from 45 or 50 fathoms to no ground.

Coleroon River, and adjacent coast. COLEROON RIVER, in lat. about 11° 22′ N. has within the entrance a small island with the fort of Devicotta, and may be known in coming from the southward by the land terminating in a point on the south side of the river, the direction of which being formerly north, from thence turns to N. N. W. and N. W. by N. about 3 leagues to Porto-Novo, forming a kind of Bay. But the best mark to know this place is a thick plantation of trees near the sea, called Coleroon Wood, which is higher than the other land, and when first seen from sea appears like a low level island, sloping toward each extreme. Inland, are situated 4 remarkable buildings, called the Chalambaram Pagodas; when just touching the south part of Coleroon Wood they bear W. ¼ N. when on with the middle of it they bear west, but will not be perceived if a ship is well in-shore, until they open to the northward of the wood, bearing then W. by S. ½ S.

Coleroon Shoal. COLEROON SHOAL, projects 4 or 5 miles from the entrance of the river, and stretching to the southward, joins the shore about the south part of Coleroon Wood; the inner part of it is dry at low water, and from 11 or 12 fathoms near the outer edge, it is steep to 3 or 4 fathoms.

How to avoid it. A large ship in coasting along here, should not come under 15 fathoms in the night, nor under 12 or 13 fathoms in the day toward this dangerous shoal.* When the southernmost of the Chalambaram Pagodas is on with the south part of Coleroon Wood, you are abreast the southern end of the shoal, which does not extend far out. When the two

* H. M. S. Falmouth, standing in toward the shoal in the night, intending to tack in 12 fathoms, but missing stays got into 4½ fathoms, and was obliged to anchor; the weather being moderate, they warped out in the morning and made sail. It may be observed, that the water shoalens more suddenly in standing toward the shore about Coleroon, than at any other part of the coast.

middle pagodas are in one bearing W. S. W. and Porto-Nova Flagstaff W. by N. ½ N., a ship will be in 12 fathoms near the north end of the shoal, which is here, nearly 5 miles distant from the shore; but a ship bound into Porto Nova, should bring the flagstaff W. by N. ¼ N. when the two middle Chalambaram Pagodas are bearing W. S. W. ¼ S., she will then be clear of the north end of the shoal, and may haul in for the Road; or if in 18 or 20 fathoms, she may haul in for it, when the flagstaff bears W. N. W.

PORTO-NOVO, in lat. about 11° 31′ N., and 3 leagues to the N. N. Westward of Coleroon River, is a place of some trade, and the road affords good anchorage in southerly winds, being sheltered from these by Coleroon Shoal, which breaks the swell. Ships may anchor in 6 fathoms mud, good holding ground, with the southernmost of the 4 Chalambaram Pagodas S. W. ¼ W., and Porto-Novo flagstaff W. ½ N., off shore 2 miles. The river is small, navigable only by boats and country vessels. Water is procured from a tank a little way up, but it is brackish and of a pernicious quality. Porto-Novo, and the anchorage.

CUDDALORE TOWN, AND RIVER, in lat. 11° 43′ N. lon. 79° 50½′ E. bears from Porto-Nova nearly N. by E. distant about 3 leagues; the coast is safe to approach to 7, 8, or 9 fathoms, from 2 to 3 miles off shore. A little to the northward of Porto-Nova, begin white sand hills near the sea, which extend along shore, and from the offing appear like islands, being higher than the adjacent coast. The anchorage at Cuddalore is in 6, 7, or 8 fathoms good ground, with the bar of the river from W. to W. S. W., and the ruins of Fort St. David N. N. W. ½ W. off shore 1½ mile. The river is small, shut up by a bar at the entrance, and navigable only by boats. Water, fresh provisions, vegetables, fruits, and other refreshments are got at this place. The ruins of Fort St. David, lie 2 or 3 miles to the northward of Cuddalore, from which a bank projects about a large ½ mile to seaward. Cuddalore; coast

From Cuddalore to Pondicherry, the coast extends about N. N. E. ¼ E. 5 leagues, being low and sandy near the sea, and may be approached with safety to 8 or 9 fathoms, the soundings decreasing regularly to 7 fathoms about 1 or 1½ mile off shore. From 42 or 45 fathoms about 6 leagues from the land, the bank has a sharp declivity to no soundings. to Pondicherry.

In coasting along from Point Calymere to Pondicherry, a ship may at discretion keep in soundings between 10 and 14 fathoms, except when passing Coleroon Shoal, she ought not to come under 13 or 14 fathoms.

PONDICHERRY, in lat. 11° 56′ N. lon. 79° 54′ E., or 1° 26′ West from Flagstaff Point Trincomale, by chronometers, is situated close to the sea, and easily distinguished by its numerous buildings, having an agreeable aspect when viewed from seaward. To the N. W. of the town, on a long flat hill, there is a piece of remarkable black land at a small distance in the country, having on it a grove or tuft of trees, which is the first thing discerned in approaching this part of the coast from sea, and is a good mark to know Pondicherry. There is a small river, into which the country boats and small vessels enter, when trading to this place. In the fair weather season, from the 1st of January to October, the common anchorage in the road, is abreast the town in 7 or 8 fathoms, about ¾ of a mile from it; small ships may moor in 5½ or 6 fathoms; but during the season when stormy weather may be apprehended, it is prudent to anchor well out, in 12 or 14 fathoms, in what is called the outer road. Geo. site. Coast

From Pondicherry to Sadras, in lat. about 12° 35′ N., the distance is 15 leagues, and the direction of the coast nearly N. N. E. ¼ E., which is in general low, with sand hills in some places fronting the sea; from 10 to 14 or 15 fathoms, are good depths to keep, in sailing between these places. From 42 or 45 fathoms, about 5 or 6 leagues off shore, the bank shelves suddenly to no ground. The bottom is mostly sand or gravel, in the offing. to Sadras.

Conjimeer. CONJIMEER, a small river where there are some ruins of buildings, is distant about 4 leagues N. N. E. $\frac{1}{4}$ E. from Pondicherry; between them, sand hills extend along the coast, and behind these, the black land from the back of Pondicherry gradually decreasing, terminates about a mile to the southward of Conjimeer. Abreast of this place, the anchorage is good, in 6, 7, or 8 fathoms, about $1\frac{1}{2}$ or 2 miles off shore.

Alemparva. ALEMPARVA, bears nearly N. N. E. $\frac{1}{2}$ E. from Conjimeer, about $4\frac{1}{2}$ or 5 leagues; about 1 league beyond the latter, a thick wood and a village is perceived, from whence to the south point Alemparva river, which rises in sand hills and projects a little into the sea, the coast is rather low; the north side of the river is covered with trees, and several small hills appear in the country.

Land about Sadras. SADRAS, in lat. 12° 31$\frac{1}{4}$′ N. lon. 80° 13$\frac{1}{2}$′ E. bears from the entrance of the small river Alemparva N. N. E. and N. N. E. $\frac{1}{2}$ E. nearly 7 leagues; the coast between them is generally barren with some sand hills, and few trees appear till within 3 leagues of the former place, where is the southern extremity of a thick wood of palmyra trees, extending about a league along shore to the northward. Abreast of this wood, the shore being more flat than to the northward or southward, a ship in passing it, should edge out a little, into 11 or 12 fathoms. There is another wood about 5 or 6 miles to the northward of the former, which appears to project out into a point when viewed from the southward. From abreast the south part of this wood, the flagstaff of Sadras may be perceived over the trees that hide the town, for this place is not easily discerned from the sea, on account of the trees with which it is surrounded. Two pagodas may be seen in passing, one to the southward, the other to the northward, but they are not very conspicuous. About 4 miles to the southward of Sadras, there is the entrance of the small river Palyam, or Paliar. This part of the coast, is known from seaward by a ridge of hills inland, at the back of Sadras, some of which are very rugged, and this ridge is generally called the High Land of Sadras, or Sadras Hills. When the highest of these bears N. W., the town of Sadras is nearly abreast.

and the coast from thence,

to Madras. From Sadras to Madras, the distance is 10 leagues N. by E., the coast between them is generally low and woody near the sea, but inland there are high hills; in coasting along, from 12 to 17 or 20 fathoms, are good depths to keep in, but it will be prudent not to come under 12 or 14 fathoms in a large ship, particularly in the night, when to the north of the 7 pagodas, on account of the reef of Tripaloor. On this part of the coast, the bank (as before) has a sudden declivity, from 40 to 45 fathoms sand or gravel, about 5 or 6 leagues off shore, to no ground.

About 3 or 4 miles off shore, at Sadras, the depths are 9 and 10 fathoms, but to the northward of that place the coast becomes more steep, those depths being about 2 to 3 miles off.

To the northward of Sadras about 7 miles, are the ***Seven Moolivaram Pagodas***, not discernible except when well in with the land; two of them stand near the sea, one of these on a rock washed by it, and is nearly destroyed, although this Pagoda, *it is said*, stood anciently at a considerable distance from the shore, the sea having encroached greatly on the land; four of them are situated in the valley near the foot of the southernmost high land, and the other on its extreme point; the view of those in the valley is often intercepted by the woods, particularly when they bear to the westward.

From the Seven Pagodas to Covelong, or Covolam, the coast extends N. by E. a little Easterly, about 3 leagues; between them, a rocky shoal projects about a mile or more into the sea, and bears E. S. E. from the small hill of Tripaloor, known by being much nearer the shore than any of the others. This reef should have a proper birth in passing, for it appears to be steep to, as will appear by the following extract, taken from the Rockingham's journal.

Tripaloor Reef.

Rockingham, 26th of May, 1776, at half past 10 P. M., hauled in a little from 13½ to 12 fathoms, directly after had 11 fathoms, and steered N. N. E.; next cast 10½ fathoms, steered N. E. the next cast had 8½ fathoms, and in hauling out to the eastward, the ship struck upon a rock, and soon bilged; had 6 fathoms under the bow, 6½ a little way ahead, 5½ under the stern, and 4½ at the main chains. Lat. observed from the wreck 12° 43′ N., 2 of the Seven Pagodas bearing S. W., and the extremes of the land from North to S. by W., off shore about 4 miles. The Nancy, Capt. Jamison, anchored near, to assist in saving the treasure, had 2 cables cut by the foul ground; and H.M.S. Sea-Horse, near her, parted a cable.*

ST. THOME, OR ST. THOMAS, bears from Covelong N. ½ E. about 4 leagues; this is a small town close to the sea, called by some Maliapore, having near it a plantation of Palmyra trees; inland, the country is mountainous, but that called St. Thomas's Mount, about 2 miles from the sea, is the northernmost, and easily known in sailing along, being lower than the others, regular and sloping in its shape, with a church built on it, and some other buildings and trees in its vicinity. St. Thomas.

From St. Thomas, the coast stretches N. ½ E. near 4 miles to Madras, and is low toward the sea, but safe to approach to 9 or 10 fathoms; between them, a black Pagoda is seen in passing. General remarks.

From Point Calymere to Madras, the greatest part of the coast is lined with a sandy beach, having a great surf rolling in upon it during both monsoons, which renders it hazardous and imprudent to land at any time in a ship's boat. Along the whole extent of coast, on this side of the peninsula, to Bengal river, the country boats are peculiarly constructed for passing through the surf; being built without timbers, with their planks sewed together, they bend to its force, and are very easily repaired.

The whole of this coast, together with that of Malabar on the western side of the peninsula of Hindoostan, is at present subject to, or under the influence and protection of the British Government.

MADRAS, OR FORT ST. GEORGE, is the principal settlement on the coast of Coromandel, and the seat of the superior governor and council. The town within the walls of the fort, where most of the Europeans dwell, is composed of neat and well-built houses, with flat terrace roofs. The Black Town, which is larger, lies to the northward at a small distance, inhabited by Hindoo Merchants, Moors, Armenians, Jews, &c. with some Europeans, who have not houses in the fort. A small river or canal, extends around great part of the walls of the fotifications, adding considerably to the security of the place, which is deemed a very strong fortress. It is a place of great trade, and the coast although sandy close to the sea, becomes fertile and of an agreeable aspect at a small distance inland; the water is excellent, and plenty of all sorts of provisions may be procured for a fleet of ships, but firewood is a scarce article. Madras.

As the surf breaks very high on the beach, the country boats are employed on all occasions where communication with the shore is requisite. The boats belonging to the ships in the road, frequently proceed to the *back* of the surf, where they anchor on the outside of it, and call the boats from the beach to carry on shore their passengers, &c. A caution.

It happens, frequently, when the weather is unsettled with a heavy swell rolling in, that the surf is so high, as to make it dangerous for any of the country boats to pass to, or from the shore; when this is the case, a *flag* is displayed at the *Beach-House*, (a sort of custom house close to the landing-place) to caution all persons on board of ships against landing, which should be carefully attended to, for *many* lives have been lost at different times,

* The distance of 4 miles, stated to be off shore, is certainly not correct; for the bearings of the land, denote the place where the Rockingham was wrecked, to be much nearer to the shore than 4 miles. Her distance from it was probably not above 1½ or 2 miles.

through the temerity of Europeans proceeding to pass through the surf, in defiance of the admonitory signal.

Road and anchorage.

The road is open to all winds excepting those that blow from the westward, off the land, and there is generally a swell tumbling in from seaward, making ships labour or roll considerably at times; they are also very liable to have the cables rubbed or cut through, by pieces of wrecks or lost anchors, there being many of the latter in the northern part of the road.* To the southward, where large ships moor, in 9, 10, or 11 fathoms, it is more clear, and less risk of injury to the cables. The bottom in many places is stiff mud, from which it is sometimes difficult to extricate the anchors. To moor in 9 fathoms, with the flagstaff from N. W. ½ W. to W. N. W. is a good situation for a large ship, where she will be about 2 miles from the shore; but ships having a cargo to discharge, often moor in 8½ or 9 fathoms abreast the flagstaff, with it bearing West or W. by N. In the season liable to bad weather, it will be prudent to anchor well out, and keep the ship in trim ready to proceed to sea, should circumstances render this advisable; the gales generally commence at N. W. blowing strong from the land, with which ships can run off shore, before the wind veer to the N. E. and eastward, when it would be impossible to get out to sea.

Cautions for ships during the precarious season.

From the beginning of October, to the 10th or 15th of December, is considered the most dangerous season to remain at Madras Road, or at any of the other ports on this coast. Gales have also been known to happen in April and May;† notwithstanding, ships are found in Madras Road, at all times, for these gales are not frequent, and if a ship be kept in good condition for proceeding to sea, embracing the opportunity to weigh, cut, or slip, and run out on the first approach of a gale, there is probably little danger to be apprehended; but many ships by remaining at anchor, have at various times been driven on shore.

A severe storm in December.

One of the severest storms ever known at Madras, which destroyed nearly all the vegetation, &c. commenced from the northward on the 10th December, 1807, shifted to the N. E. and East, where it blew a hurricane, and then veered to S. E. raging with equal violence.

Lighthouse described.

The lighthouse, erected upon the Exchange, or Commercial Hall, to guide ships into the Road, or clear of Pulicat Shoal in the night, is 90 feet above the level of the sea, and may be seen about 5 leagues from the deck of a large ship, or near 7 leagues from the mast-head; the south part of Pulicat Shoal, bears from it about N. by E. ¾ E. 13 miles, but to keep clear of the shoal, the light should bear to the westward of S. S. W. ¼ W.

Approximation of the lat. of Madras Flagstaff and the Observatory.

At anchor in December, 1793, with the flagstaff of Madras fort bearing west 2 miles, by mean of several days observations, I made it in lat. 13° 4′ 10″ N., and in May, 1795, I made it 13° 4′ 12″ N. Captain P. Heywood's observations, place it in lat. 13° 4′ N.

Captain John Warren, of H. M. 33d regiment, Temporary Astronomer at Madras, in the absence of Mr. Goldingham, by 176 observations of the sun with circle and zenith sector, made the observatory in lat. 13° 4′ 5″ 30‴, 7 N. And by 500 observations of 52 stars within 8° of the zenith, taken with the zenith sector, he made it in lat. 13° 4′ 13″ 17‴ N. The mean of which gives 13° 4′ 9″ 23‴, 8 N. for the lat. of Madras Observatory, by 676 observations, taken by Captain Warren.

The lon. of this place is generally considered to be more correctly ascertained, than any other place on the coasts of India, which opinion is corroborated by the following observations.

* Ships that moor or anchor under 9 fathoms, if it can be conveniently done, ought with their boat to sweep the bottom with a small line within the range of their cables, to dicover if any anchors are in the way, whereby they might receive injury. I have been weighing 2 lost anchors, close to the ship after we had moored.

† On the 4th of May, 1811, H. M. S. Dover, the Chichester Store Ship, and several other vessels, were driven from their anchors on shore and wrecked, in a violent storm at eastward, which beat in the doors of the houses, broke down the trees and the flagstaff of the fort. An American ship went to sea at the commencement of the storm, and received no particular injury.

Approximation of the lon. of the flagstaff of the fort.

| | | |
|---|---|---|
| Allowing Bombay Castle in lon. 72° 57′ 40″ E. the difference of lon. I measured from it by mean of 3 chronometers, made Madras Flagstaff in | lon. | 80° 19′ 25″ |
| By chronometers from Bombay, allowing it as above, Capt. P. Heywood made | ditto | 80° 21′ 40″ |
| By chronometers from Bombay, allowing it as above, Captain C. C. Mc. Intosh made | ditto | 80° 22′ 40″ |
| | Mean | 80° 21′ 15″ |
| Allowing Point de Galle in 80° 20′ E. by 2 chronometers, the difference of lon. I measured, made | ditto | 80° 21′ 52″ |
| By mean of 20 sets observations ☉ ☾ ✱ taken in the Road, I made | ditto | 80° 22′ 00″ |
| | Mean of the whole | 80° 21′ 42″ E. |

The Observatory at Madras, is 2′ 20″ W. from the church in the fort, and the latter is nearly on the meridian of the flagstaff, or very little to the westward of it, and among seven years observations of Eclipses of Jupiter's Satellites, taken by Mr. Goldingham the Astronomer at Madras, I find 7 observations corresponding, taken at the Royal Observatory at Greenwich; the mean of which, places Madras Flagstaff in lon. ..... 80° 22′ 18″ East.

| | | |
|---|---|---|
| By adding to this the former mean lon. obtained by chronometers and lunar observations | .... | 80° 21′ 42″ |
| Gives for the lon. of Madras Flagstaff | | 80° 22′ 00″ East, |

by mean of lunar observations, chronometers, and corresponding observations, immersions, and emersions of Jupiter's Satellites. Mr. Goldingham informs me, that by correspondent sights, and various other observations taken during his residence at Madras Observatory, deduced to the flagstaff of the fort, made it in lon. 80° 21′ E., *without sensible error*; it may therefore be inferred, that the lon. of the flagstaff is ascertained within 1 mile of the truth, and that it is either 80° 21′ or 80° 22′ East of Greenwich, or between these extremes.

Currents.

In the beginning, and during the strength of the N. E. monsoon, the current sets strong along the coast to the southward, sometimes 1½ and 2 miles an hour in December, but abates in January.

During the S. W. monsoon, particularly in the early part of it, after the 1st of February, the current frequently runs equally strong to the northward, which makes it necessary for ships to fall in with the land to windward of the port to which they are bound: this caution ought not to be neglected by ships that sail indifferently upon a wind.

The Lushington, on the 6th of February, 1811, made the land at Pulicat, and anchored in 7 fathoms, with the flagstaff N. W. by W., the current running strong to the northward; with the sea-breezes scant at S. E., and the land-breezes at S. W., she was 2 days getting to Madras. The Duncan, Madras, and Anna, also fell in with the land a little to the northward, on the 5th of February, and did not reach Madras till the 7th at midnight.

Ships approaching Madras after the 1st of February, ought, therefore, not to make the land to the northward, but endeavour to steer direct for it, or rather to make it bearing to the N. Westward, particularly if the wind be southerly. In the opposite season from September to February, ships must endeavour to make the land a little to the northward, for many ships which made the land a little to the south of Madras in the N. E. monsoon, have been from one, to two, and three weeks, gaining a few miles to the northward, and with the utmost difficulty reached the port.

# *COAST of COROMANDEL continued, from MADRAS to the NORTHWARD;*

## WITH SAILING DIRECTIONS.

Ennore. ENNORE,* a village in lat. 13° 15′ N., bears from Madras N. by E. ½ E., distant 3½ leagues, and about 1¼ mile to the southward of the village, stands Ennore House, close to the sea. Near a league to the northward of that house, is situated the southern extremity of Pulicat Shoals, bearing about W. S. W. from a thick tope of trees, which is the first to the northward of Ennore House, and may be known by 2 trees at its southern extremity, separated from the rest. The sea generally breaks about 1 or 1½ mile from the shore, on the south part of the shoal or reef opposite the tope of trees, there being less water on this part than any where else. The most dangerous part of the reef, is a place with 3 and 3½ fathoms hard sand on it, distant 3 miles from the southern part mentioned where it breaks, and the same distance off the shore abreast, having 10 and 11 fathoms very near it on the outside.

Inner Channel. Between this 3 fathoms bank, and the southern part of the reef that breaks, there is an inner passage leading to Pulicat Road, which is known by observing, that there is a second tope of cocoa-nut trees about 1½ mile to the northward of the first already described; when the second tope bears W. ½ S., a ship may steer direct for it, until she get into 6 fathoms ouze and mud, she will then be about a mile from the shore, and may steer N. ½ W. in regular soundings to the road.† The flagstaff is near the middle entrance of the river, there being one to the southward and another to the northward. Large ships ought to pass outside, and if bound into Pulicat Road, should not come under 13 or 14 fathoms until the flagstaff is brought to bear W. by N. or W. by N. ½ N., they may then steer for it, and will not have less than 5½ or 6 fathoms sandy bottom in crossing the northern tail of the reef.

To proceed into Pulicat Road.

Anchorage. PULICAT ANCHORAGE, is in 7 to 8 fathoms, from 1 to 2 miles off shore, abreast of the flagstaff, which is in lat. 13° 25′ N., and 2¼ miles east from Madras Flagstaff. Between Ennore House and Pulicat, the shore presents a regular convex front to the sea, and is low from Madras, abounding with trees to the southward of Ennore. Inland, there is a high chain of mountains called the high land of Pulicat, or Pulicat Hills, at the southern part having a small piece of table land, or hill, called the Kettle Bottom, which bears due west from Pulicat Flagstaff, N. 85° W. when on with the middle of the bank, and N. 69° W. when on with Ennore House. A little to the southward of the Kettle Bottom, there is a hill less elevated, remarkable by a small crooked nob on it, bent over to the southward, and resembling a horn, which is called Naggery Nose; this hill is situated in lat. 13° 22′ 50″ N. lon. 79° 39½′ E.

The coast described.

To sail from the southward clear of the shoals. From Madras Road, to pass clear of the reef stretching along the coast from Ennore to Pulicat, the course is N. N. E., and the distance about 6 leagues to its outer edge, situated about 3½ miles off shore to the S. Eastward of Pulicat, directly opposite to the third tope of trees to the northward of Ennore. At this part, it is steep from 10 and 11 fathoms to 4 and 4½ fathoms, and should not be approached under 12 or 13 fathoms in a large ship, neither ought the southern extremity of the reef to be borrowed on under these depths. In steering

* Called Trifoo and Natoor, in some old charts and directories.

† The greatest part of this description of the Pulicat Shoals, is taken from the survey of them by Mr. J. Goldingham, in 1792. The rise of tide at Pulicat is from 2½ to 3 feet on the springs, high water at 9½ hours.

along the coast from Madras, a ship ought not to shoal under 12 or 13 fathoms, particularly in the night, she ought to keep out in 16 or 17 fathoms when abreast of Pulicat Reef, and if the Light of Madras is discernible it must bear to the westward of S. S W. ¼ W. in passing those shoals. The depths are from 45 to 50 fathoms on the edge of the bank, about 5 to 6 leagues off shore, on this part of the coast; from 30 to 35 fathoms, 2½, 3, or 3½ leagues off, and from 18 to 20 fathoms about 4 and 5 miles off shore.

Coast from Pulicat to the northward.

ARMEGON, OR DURASPATAM, in lat. about 13° 58′ N. bears nearly N. N. W. from Pulicat, distant 11½ or 12 leagues; about half way between them, Point Pondy projects a little into the sea, with a shoal surrounding it to the distance of about 2 miles: and to the E. S. E. of this point, there is *said* to be a small spot about 8 miles off shore, with only 2½ fathoms on it, called the London's Bank, having 20 fathoms on the outside, and from 12 to 9 fathoms inside between it and the land; but this bank probably does not exist, for no danger is thought to lie so far from the coast in this part.

Armegon Shoal.

To the N. N. Eastward of Point Pondy about 2½ leagues, and nearly the same distance from the shore, is situated the shoal of Armegon, having only 3 fathoms on it, and in some parts there is said to be only 2 fathoms. This shoal is of considerable extent, but has never been regularly examined; between it and the main, there is a channel with 5 and 6 fathoms, and there are 10 and 11 fathoms close to it on the outside.

Sailing Directions.

A ship bound from Pulicat to the northward, and wishing to keep near the shore, may continue in 9 or 10 fathoms, which will carry her inside the London's Bank, (if it exist) and when abreast of Point Pondy, she may edge out into 10 or 12 fathoms to give a birth to the Armegon Shoal. Armegon Hill, situated 2 or 3 leagues west from the town and river, is of regular form, and detached from any other high land; if bound into Armegon Road, a ship ought to keep in 11 or 12 fathoms until the hill bears W. ¼ S., or on with the north grove at the entrance of the river, which will be seen from the poop, and the Kettle Bottom, *if visible*, will then bear S. W.; she may from hence, steer direct for the hill, and will pass to the northward of the shoal in not less than 6 fathoms, until she anchor opposite to the river in 5 or 6 fathoms, within 2 miles of the shore. Notwithstanding the directions given, it is advisable for large ships to be very careful when bound into this place, or approaching Armegon Shoal, as its extent is very imperfectly known.

Kistnapatam, and coast adjacent.

KISTNAPATAM, OR KALITORE, bears from Armegon nearly north about 5 leagues, the coast between them is low, and may be approached to 6 fathoms; ships may anchor abreast of Kistnapatam River in 5 or 6 fathoms. Between it and Armegon, there is a place called Cotapatam. From Kistnapatam, a sand stretches along the coast to the northward, around Point Pennar, about 4 leagues distance; it is called Shallinger's Sand, and projects about 3 or 4 miles from the shore, having regular soundings of 4 and 5 fathoms on its outer edge.

Point Pennar,

Point Pennar, in lat. about 14° 30′ N., is a part of the coast having a regular convexity to seaward, but it is not remarkable; near it there is a river.

and the Coast to Gondegam.

GONDEGAM,* OR GREAT GANJAM, in lat. 15° 20′ N., bears from Point Pennar about N. by W., distant 16 or 17 leagues, the coast between them is generally low fronting the sea, and may be approached to 7 or 6 fathoms. About 5 leagues to the northward of Point Pennar, Divelan Village and River are situated, and 6 leagues farther the River Cerrara, where there is a village and a pagoda. Inland from this part of the coast, there are some hills which may be seen at a considerable distance. The river at Gondegam is con-

* This place, like many on this part of the coast, is very differently placed in some charts from what it is in others; the lat. here given, is from observations taken in the Company's ship Henry Dundas, in June, 1798. Some charts place it 8 leagues farther to the northward, and some of them place Cerrara in the lat. here assigned to Gondegan 15° 20′ N., whilst others place Mootapilly in the same latitude.

sidered to bound the coast of Coromandel to the northward, beyond which the coast of Golconda begins, but the appellation of Coromandel is often applied to the whole of the coast, as that of Malabar is to the whole extent of coast on the western side of the peninsula.

# *COAST OF GOLCONDA.*

## PORTS, BAYS, AND HEADLANDS, WITH SAILING DIRECTIONS.

Mootapilly. MOOTAPILLY,* about 8 leagues to the N. N. Eastward of Gondegam, is a small village ½ a mile inland, not discernible from a ship; but with the assistance of a glass, a small pagoda is perceptible. There are about 20 detached palmyra trees to the northward of the landing place, and about a mile to the southward, a thick grove of trees with a *clump* on its southern part higher than the rest. With the northern extremity of a piece of high land in

Anchorage. one with a thick grove of trees, you are abreast the proper anchorage, in lat. 15° 42′ N.

The Dundas in 5 fathoms soft ground, at anchor in the road, off shore 1 mile, had the extremes of the land bearing from N. E. to S. W. ½ W., high land W. by S., and the pagoda at Mootapilly N. W. by N.

Mootapilly Bank; In sailing along this coast, it is prudent to keep near the land in soundings between 6 and 8 fathoms, as an extensive bank to the S. E. and Eastward of Mootapilly, is *thought to lie* about 3 leagues off shore, having 10 and 11 fathoms inside, and 13 fathoms close to it on the outside. The north end of this bank is by some persons thought to be distant from False Point Divy 3 or 4 leagues to the S. W., and to stretch from thence 6 or 7 leagues to the S. Westward, and there is said to be no less than 3 fathoms on its S. Western part, where it is most shoal; several Bengal ships, however, have accidently got on it in 2½ fathoms, and

very imperfectly known. there may probably be less in some parts. Our knowledge of the true situation and extent of this bank is very imperfect, for it appears never to have been examined; a survey of it, the Armegon Shoal, and the coast from Pulicat to Masulipatam, would be of great utility, as the large Europe ships are sometimes sent to places on this coast, inside of the shoals.

Coast opposite. From Mootapilly to False Point Divy, the coast takes a circular direction, first N. E. then Eastward, the distance about 14 or 15 leagues, and forms a bay to the westward of the latter; in this space, the coast is low and woody, having the villages of Pettahpilly and Nisampatam, with 2 small rivers near them; Pettahpilly is the westernmost of these, and may be known by a flat grove of palmyra trees near it; the lat. of this place is about 15° 50′ N.

False Point Divy, coast around; FALSE POINT DIVY, in lat. about 15° 47′ N., projects from the main to the southward, forming the east side of Pettahpilly Bay, having the River Sippeler and other branches of the Kistna, falling into the sea close to it, or in its vicinity. A bank of very shoal water, projects from this point about 2 leagues, both to the westward and southward, but is safe to

to sail along it. approach, as the depths toward it, decrease gradually. Ships coming from Mootapilly, ought to steer along the coast in from 6 to 8 fathoms until they approach False Point Divy; they must then haul to the S. Eastward to round the shoal flat extending from it, and may borrow on it to 4½ or 5 fathoms; in these depths the distance from the point will be 6 or 7 miles, and it is advisable to borrow the soundings from the main, as the distance of the north

* In the Old Directories, it is said to be only 3 or 4 leagues to the N. E. of Gondegam; the description here given, is from observations taken in the Dundas. From some of the ports, on this part of the coast, salt is exported to Bengal and other places.

end of the bank from False Point Divy, (already mentioned having 2¼ fathoms on it) is not correctly known. The Dundas in steering along the coast from Mootapilly toward Masulipatam, shoaled once to 4½ fathoms on the flat projecting from the False Point, her distance from it then 6 or 7 miles.

POINT DIVY, in lat. 15° 59′ N., lon. 81° 16′ E. by ☉ ☽ ✱, bears from the False Point N. E. by E., distant 6½ or 7 leagues; the coast between them is low, and forms a small bight, with a shoal flat extending from it to the distance of 5 miles. Point Divy is surrounded by a shoal flat projecting from it to the southward and eastward about 6 miles, on which the sea breaks in some places; ships in passing it, may occasionally borrow into 5½ or 6 fathoms with a commanding breeze, as the water shoals gradually, though rather suddenly in borrowing on the edge of the shoal. The point is low,* without any distinguishing mark, except some trees covering it; for the low level coast which stretches from it to the N. N. Westward, forming the west side of the semi-circular Bay of Masulipatam, is destitute of them. Geo. site of Point Divy, circumjacent coast.

Around the point, and between it and the former place, several branches of the River Kistna fall into the sea; the great quantity of earth carried from the land during the rains by these rivers, has probably formed the shoal flats along this part of the coast.

The rise and fall of tide, is seldom more than 4 or 5 feet in the springs at the mouths of the rivers, but it sometimes happens, when a severe gale of wind blows from the sea, that the low land contiguous to it is inundated, causing a great destruction of property and lives.

In approaching Point Divy from the eastward, the depths decrease quickly after a ship gets on the edge of soundings, about 5 leagues off shore, the lead, ought, therefore, not to be neglected, when standing towards it, or any part of this low coast.

MASULIPATAM, in lat. 16° 11′ N. lon. 81° 13′ E. by ☉ ☽ ✱, bears nearly N. by W. ½ W. from Point Divy, distant about 12 or 13 miles, the coast between them is low and sandy, lined with a shoal flat, having 3½ and 4 fathoms on the edge of it, about 5 miles off shore. Geo. site of Masulipatam.

With a southerly or westerly wind, a ship bound into the road, may after bringing Point Divy to bear about west in 7 or 8 fathoms, steer along the edge of the flat, shoaling to 5 or 4½ fathoms gradually as she approaches Masulipatam, which will easily be known after rounding the point, by the appearance of the flagstaff and buildings; should she get into 4 fathoms, or have a hard cast, she ought to haul out instantly to the eastward. To sail into the road.

The shore is very flat all round the bay, the depth in approaching it being not more than ½ a fathom for the distance of near a mile. Ships in the fair season, generally anchor at Masulipatam abreast the town, in from 4 to 5 fathoms mud, with the flagstaff from W. to W. by N., off shore 4 or 5 miles. This town is situated on a small branch of the River Kistna, and is a place of considerable trade; the export chiefly cottons, printed in a variety of patterns.

Ships bound to Masulipatam, from March to October, should make Point Divy, taking care not to fall to the northward; in coming from Madras they should take care to keep in soundings, but to avoid the Armegon Shoal, and that fronting the coast of Mootapillah, they ought not to borrow under 20 fathoms in passing, particularly in the night. When False Point Divy is approached, or the coast between it and the true point, they may with the wind at S. W. or Westward, haul into 8 or 9 fathoms, decreasing the depth of water gradually when round the point, until they reach the road of Masulipatam. This proceeding is proper during the strength of the S. W. monsoon, but in February, March, and April,

* To guide ships when passing this point in the night, or in hauling round the shoal flat toward Masulipatam, a lighthouse erected on it would be of great utility.

should the winds incline from S. E. or Eastward, *which sometimes happens*, it will be prudent to keep at a reasonable distance from the land, and steer directly from seaward into the Bay, of Masulipatam.

When most liable to unsettled weather.

In October, November, and part of December, the weather is very unsettled, the winds generally from N. E. and Eastward, and a current running mostly strong to the southward, therefore, ships bound into any of the ports on this coast during these months, must fall in with the land to the northward of the place to which they are bound, for they will seldom be able to gain any northing when near the land in this season. As most of the roads on the coast are exposed to gales of wind from the sea, which are liable to happen from the 1st of October to the middle of December, or 1st of January,* few ships remain in them during this period, except on particular occasions. From the 10 or 15th of October, to the 10th or 15th of December, is considered the most precarious time.

Narsapour and the adjacent coast.

NARSAPOUR, OR NARSIPORE POINT, in lat. 16° 19′ N., bears from Point Divy nearly N. E. by E. 12 leagues, and from Masulipatam E. by N. northerly, about 11 leagues; it forms the eastern extremity of the great bay formed between it and Masulipatam; and close to it on the west side, the river of Narsapour falls into the sea, which is the principal branch of the Kistna, and other branches of that river fall into the bottom of the bay to the westward. On the bar of Narsapour River there is 8 or 9 feet water, and 3, 4, or 5 fathoms inside, in the passage to the town; a shoal bank projects about 3 or 4 miles to the southward and westward of the river and point, on which the sands are liable to shift and alter the channel leading to the former. The anchorage in the road, is in 4½, 5, or 5½ fathoms, to the westward of the point, near the edge of the flat that extends from the river, off shore 4 or 5 miles. In a direct course from Point Divy, across the entrance of the bay to Narsapour, the depths are from 14 to 24 fathoms, shoaling fast toward either Point.

From Narsapour Point, the coast stretches nearly N. E. by E. about 12 leagues, then changes to N. N. Eastward and North, 3½ or 4 leagues farther to Point Gordeware; the coast between them is low, and may be approached occasionally to 7 or 8 fathoms, but in a large ship it is prudent to keep farther out, particularly when within 3 leagues of Point Gordeware, she ought not to borrow under 14 or 15 fathoms in the night toward the extensive shoal that surrounds the point; between these points, some rivers fall into the sea.

Geo. site of Point Gordeware.

POINT GORDEWARE, OR GADAVERY, in lat. 16° 48′ N. lon. 82° 24′ E., by mean of lunar observations, but in lon. 82° 17′ E., as stated by Mr. Topping, in his survey of Coringa Bay, is a low narrow sand bank, extending nearly north and south several miles, the north end of it being considered as the point, though some navigators set the low islands on the west side of the sand bank, for Point Gordeware, as these are covered with trees and bushes, but partly inundated at high water. The sands environing the point, on which the sea breaks, extend from it about 3 miles to the N. E. and Northward, having channels for boats between some of them; one of them called Hope Island, is a dry sand bank to the N. N. W. of the point, from 2 to 3 miles distance, and 2½ or 3 miles within the eastern extremity of the reef, its north end being in lat. 16° 51′ N.; to the northward of Hope Island, the bank consists of soft mud, where it fronts the sea, and the edge of this mud bank, having 2 and 3 fathoms on it, extends from the northern extremity of the reef, about W. N. W. and W. by N. to Coringa Road. A little to westward of the edge of this bank, the bottom becomes hard sand, so shoal, that nearly the whole space between Coringa River and Point Gordeware Reefs is dry, or barely covered at low water.

Surrounding shoals.

* Gales of wind have at times, been known to happen during the S. W. monsoon, particularly at its commencement in April or May; a storm has also been experienced in August, although bad weather is seldom apprehended, when the S. W. monsoon prevails.

The principal branch of Gadavery River, is to the N. Westward of Point Gordeware; Coringa River. Coringa Town is situated on another branch of it, generally called Coringa River, bearing from the Point W. by N., distant 6 miles. This is the best place on the coast for repairing or building small vessels, there being a considerable number of shipwrights and caulkers, constantly employed building or repairing the numerous coasting traders which belong to, or frequent the river or road. On the bar of Coringa River, there is from 12 to 14 feet over a sandy bottom in common spring tides; the water here, as well as in the road, is smooth, and outside the bar, the bottom being soft mud, it is common to see the country vessels aground in it.

When over the bar, the leading mark up the river is a small tope of trees about 120 yards from the starboard shore, kept a-head about W. by S. $\frac{3}{4}$ S., until the river on the starboard side is open, a vessel should then steer to the S. Westward, keeping nearest to the starboard shore in passing to Coringa Town, which is situated on the southern shore about a mile from the point that forms the entrance on the same side; the depths in the river, within the bar, are in general, from $2\frac{1}{2}$ to 4 fathoms. The Company have a resident at the town of Ingeram, about 6 leagues up the river, from whence a considerable quantity of piece goods is exported.

The Company's house at Coringa is in lat. 16° 49′ N.; it is high water here, at 9 hours on full and change of moon, the rise of tide from 4, to 6 feet on the springs, and $2\frac{1}{2}$ or 3 feet on neap tides; but when storms happen, or strong gales blow from the sea, the country being low, is liable to inundations, the sea having been known to rise greatly above its ordinary level at such times.

The country vessels generally anchor in 3 or $3\frac{1}{2}$ fathoms in Coringa Road, about $1\frac{1}{2}$ or 2 miles from the shore, with the 2 pagodas at Jaggernautporam, or the flagstaff, about N.N.W. to N. N. W. $\frac{1}{2}$ W., and Hope Island S. S. E. $\frac{1}{2}$ E., if this low sandy island is visible; the bar off Coringa River will then bear about S. W. by S. Large ships anchor more to the northward in $4\frac{1}{2}$ or 5 fathoms, nearly abreast of Solinga Pagodas, with Jaggernautporam bearing about N. W. by W., and the flagstaff at Coringa S. S. W. or S. S. W. $\frac{1}{4}$ W., where they may be supplied with wood, water, and provisions; or in the fair season, may get any repairs done that may be requisite. Anchorage.

JAGGERNAUTPORAM, in lat. 16° 56′ N., about 7 miles nearly due north from Coringa, is a village with some white buildings, and 2 small pagodas near it; on the bar at the entrance of the river, which is about a mile to the eastward of the village, there is a considerable surf, and it is scarcely navigable by boats at low water; inside, the depths are from 4, to 7 or 8 feet, but this river being small, is seldom frequented except by boats or donies. The anchorage in the road, is abreast the river's entrance, in 5 or $5\frac{1}{2}$ fathoms soft mud, with the village bearing W. by N. or W., and Coringa flagstaff about S. S. W., off shore 1 or $1\frac{1}{2}$ mile. Ships may at times, obtain refreshments, and water at this place.* Jaggernautporam River. and anchorage.

To the S. E. and Southward of Point Gordeware, the bank of soundings is steep, from 45 or 50 fathoms about 4 leagues off, to 16 or 18 fathoms in a run of 3 or 4 miles toward the shore; care is therefore, requisite in the night, when approaching the point from seaward, as the depths decrease suddenly; a large ship ought not to come under 16 or 17 fathoms, and should be prepared to tack immediately after getting soundings. To the northward of the point, the soundings are more regular, and do not decrease so suddenly as to the S. E. and Southward. Care requisite in approaching Point Gordeware.

* Having our rudder injured in the Nancy during a gale, we put into the road of Jaggernautporam, where we remained from the 27th September to the 7th October, 1784, with the rudder on shore repairing, and sailed from thence on the day last mentioned.

How to round it,

Although the reefs surrounding Point Gordeware are dangerous to approach in the night, or in thick weather, they may occasionally with a gentle commanding breeze, be borrowed on in the day to 9 or 10 fathoms. The Marchioness of Exeter, on the 14th August, 1802, steered along the breakers off the point in 7 and 8 fathoms, when the *False* Point bore S. S. W., and the True one W. by S., on with a white building; and she rounded the N. E. extremity of the breakers in 6 fathoms, distant ½ a mile, with the pagodas at Jaggernautporam bearing about N. W. by W., which is certainly as close to them as a ship ought to venture.

and sail into Coringa Bay.

With a southerly wind, bound to the anchorage in Coringa Bay, a ship after rounding the reef off Point Gordeware, may steer to the W. N. Westward along the edge of the mud bank in 6 or 7 fathoms, until she reach the road; or in working, with the wind from westward, she may borrow on the edge of it to these depths at tacking, but the soundings are not always regular. From the entrance of Jaggernautporam River, S. W. about 2½ miles,

Bank with 3½ fathoms.

and 2 miles from the nearest shore, there is a bank of 3½ and 4 fathoms hard ground, that ought to be avoided in a large ship; between it and the shore, the depths are from 4½ to 4 fathoms soft bottom, and the same to the southward, betwixt it and the edge of the mud bank, in a channel about ¾ of a mile wide.

Large ships seldom anchor inside the 3½ fathoms bank mentioned above, except they are in want of careening or repairs; in such case, the best birth is to the southward of it, in 4 or 4½ fathoms, in Coringa Road. A little to the northward of the entrance of Coringa River, there is an inlet and a village where fresh water may be procured, and about half-way between it and Jaggernautporam, is situated the 3 small pagodas of Solinga, with the entrance of another inlet or small river a little to the northward.

Wattara.

WATTARA, a small town in lat. 17° 26′ N., bears from Point Gordeware N. E. by N., and from Jaggernautporam nearly N. E., distant about 15 leagues; the coast between them may be approached with safety to 12 or 14 fathoms, about 2 or 3 miles off shore, being bold and clear of dangers; the edge of soundings is seldom distant above 4 leagues from the shore. The low coast of Golconda terminates about 6 leagues to the northward of Jaggernautporam, where a ridge of hills or highland begins, from thence stretching along near the sea to Ganjam.

# *COAST OF ORIXA, OR ORISSA,*

## WITH SAILING DIRECTIONS.

Coast of Orixa.

THE COAST OF ORIXA, is said to commence to the southward of Wattara, extending from thence to the entrance of the River Hoogly, but the southern part of this coast is generally called the Circars, and the name Orixa, used for that part farther to the northward.

Geo. site of Vizagapatam,

VIZAGAPATAM, in lat. 17° 42½′ N. lon. 83° 26′ E., is distant about 10 leagues N. E. ½ E. from Wattara; the coast between them is a little convex, with middling high land near the sea, bold, and safe to approach to 14 or 15 fathoms, within 2 or 3 miles of the shore.

adjacent coast.

Vizagapatam may be known by the bluff headland called the Dolphin's Nose, which forms the S. W. point of the road, but it is obscured by the high land beyond it, when

viewed from the offing at a considerable distance. About 4 leagues to the S. Westward, Pigeon Island is situated almost close to the shore, appearing like a small hummock, and not discernible until near it: the coast opposite to this island, is sandy and barren. When Pigeon Island bears about north 5 or 6 miles, the Dolphin's Nose, may be plainly seen, and the other hills around Vizagapatam; one of these, to the northward of the road, is called the Sugar Loaf, but the highest is several leagues inland from the town.

Where to anchor in the road.

In the S. W. monsoon, the best birth for small vessels is close under the N. E. side of the Dolphin's Nose, in 6 fathoms sandy bottom, it being steep to. Large vessels in the same season, may anchor in 8 or 9 fathoms mud and sand, with the Green Hill to the southward of the Dolphin's Nose bearing S. W., the Bar Battery N. W. by W., and the Sugar Loaf in one with Walltear House.

In the N. E. monsoon, it is prudent to anchor farther to the N. Eastward, in the same depths, with Walltear House on with the west side of the Sugar Loaf, and the top of Green Hill just open with the Dolphin's Nose; the flagstaff of the fort will then be nearly in one with the centre of the Middle Battery, and the mouth of the river open, where a ship will be in 8 fathoms sand and mud, off shore $1\frac{1}{2}$ or $1\frac{3}{4}$ mile; this is a good birth, and ships ought not to anchor farther to the northward. When ships bring up, farther out, in 11 or 12 fathoms, they are in danger of losing their anchors, the bottom being very stiff mud.

On the bar at the entrance of the river, there are from 8 to 10 feet water, and sometimes more in the N. E. monsoon, but the sands are liable to shift, with a decrease of depth in the opposite monsoon. As the water shoalens fast in standing into the road, sail should be reduced in time, before a ship is too near the shore. Abreast the Dolphin's Nose at 2 or $2\frac{1}{2}$ miles distance, the depths are 20 and 21 fathoms, with it bearing about N. W., and the shore continues equally steep from thence toward Pigeon Island; the bank of soundings hereabout, extends $3\frac{1}{2}$ or 4 leagues from the land.

Bimlipatam and adjacent coast.

BIMLIPATAM, in lat. 17° 53′ N., bears N. E. about 5 leagues from Vizagapatam; the coast between them is bold, having 15 and 16 fathoms within 2 or 3 miles of the shore.

A hill projects out into a headland on the south side of the river, and all the land near this place is high. Ships may anchor in from 6, to 8, or 9 fathoms, abreast of the river and village, in the S. W. monsoon; and a little farther to the northward in the other monsoon.

Santipilly Rocks.

From Bimlipatam the coast trends N. E. by N. 8 or 9 miles to Conar, or Conara River, and about 2 miles eastward from the river is Conara Point. Nearly opposite to this point, in lat. 17° 58′ N., there is a dangerous ledge of rocks under water, not easily discerned, distant 5 or 6 miles from the shore, called CONARA, or SANTIPILLY ROCKS: close to them on the outside, the depths are said to be 16 and 17 fathoms, so that a ship ought not to come under 17 or 18 fathoms in passing on that side. Inside of these rocks, there is a safe channel with 9 or 10 fathoms near them, and 5 or 6 fathoms toward the shore; a ship in passing through it, should keep nearly mid-channel, in 8 fathoms water.

Chicacole & Calingapatam River.

CHICACOLE RIVER, in lat. 18° 12′ N., bears from Conara Point N. E. ½ E., distant 6 or $6\frac{1}{2}$ leagues; the coast between them is high, and may be approached to 10 or 11 fathoms, about 2 or 3 miles off shore. About $4\frac{1}{2}$ leagues to the E. N. Eastward of Chicacole, CALINGAPATAM RIVER is situated on the north side of a point of land, to which the coast may be approached into the same depths, and at the same distance as mentioned above. Ships may anchor at these places in 9 or 10 fathoms; there being but little trade, they are seldom frequented.

Geo. site of Ganjam. GANJAM FLAGSTAFF, in lat. 19° 22′ N. lon. 85° 10′ E., by the observations of Captain P. Heywood, bears from Calingapatam River nearly N. E. by N., distant 26 leagues; the coast between them is high land, and may be approached in general to 12 or 14 fathoms, about a league from the shore. In this space, there are several small rivers and villages near the sea, that of Caletar or Alatar, is 3½ or 4 leagues to the N. E. of Calingapatam, and about 5 leagues farther is the River Pondy, or Poondy, having several rocks projecting from it a considerable distance to seaward. Over this place, some distance in the country, the land is high and uneven, called the High Land of Pondy, which along

Other places on this part of the coast. the coast becomes of middling height, but equally uneven. Barwa, or Barva River, is about 5 leagues to the N. Eastward of Pondy, having several hills contiguous, which are not very remarkable. From this place to Ganjam, the distance is about 12 leagues N. Eastward; the coast between them contains the small River Sommaverom nearest to Barwa, and that of Carapar, with an oblong hill near it, 3 or 4 leagues from Ganjam. A little to the S. Westward of Carapar Hill, upon a woody and level piece of land, stands Monsoorcottah Pagoda, and the river of Carapar or Monsoorcottah, is about 4 leagues to the S. W. of Ganjam, having a small fort at its entrance. When a scarcity prevails on the coast, ships carry rice from Bengal to this place.

At Ganjam a considerable trade is carried on, particularly by coasting vessels, many of which can enter the river, it being of considerable size. Ships may anchor in the road, abreast of the fort or river's entrance, in 8 or 9 fathoms, about 2 miles off shore. The bottom along this part of the coast, is sometimes coarse sand or gravel, affording indifferent anchorage, and under 20 fathoms about 3 or 4 miles from the shore, the depths decrease

Bank of soundings. suddenly in standing toward it. From Vizagapatam, the bank of soundings lining the coast, has generally from 40 to 45 on the edge of it about 4 or 5 leagues off shore, an acute declivity to no ground; from 20 to 30 fathoms, are good depths to preserve in coasting along with a fair wind.

Manikpatam and the coast. MANIKPATAM, in lat. 19° 40′ N. bears about N. E. by E. from Ganjam, distant 11 or 11½ leagues; the chain of mountains extending along the coast, terminates in several saddle hills to the northward of the latter place, leaving between them and the shore a low level plain of reddish soil, where it fronts the sea. Ships in coasting along, may approach the shore occasionally to 10 or 12 fathoms, but it is preferable to keep in from 16 to 20 fathoms.

Manikpatam is situated at the entrance of an inlet or small river, leading to the Great Chilka Lake, which is said to extend about 10 leagues along the coast; it may be known by a small pagoda encompassed with other buildings, having near them some trees. From this place, a sand bank is said to project 2 miles, on which the water shoals suddenly from 10 to 4 fathoms; a ship ought, therefore, to avoid it in passing, by not coming under 11 or 12 fathoms.

from thence, to From Manikpatam to Jaggernaut Pagodas, the coast extends about E. N. E. 5 or 6 leagues, but the pagodas being a little inland, bear from the former place nearly E. N. E. ½ N.; between them the coast is low with a sandy beach, and may be approached occasionally to 10 or 11 fathoms, about 2 or 2½ miles off shore.

Jaggernaut Pagodas. JAGGERNAUT PAGODAS, are 3 large circular buildings, surrounded by several smaller ones; they are of a conical form, decreasing in diameter from their bases as they rise to the summits, which are covered with white domes, and crowned with an ornamental globe or urn, and wind vane. The westernmost pagoda is the largest, and the eastern one the smallest of the three. They are all nearly in one bearing W. by N.; when brought to bear N. W. they begin to appear separated, when N. N. W. they are perceived to be distinct buildings, though when seen far off, they seem connected at bottom. They are situated

upon low land, well clothed with shrubs and small trees; and as many other white buildings stand near them, of diminutive size, in comparison with the largest Pagoda, probably give an idea of its magnitude greater than the truth. This pagoda is in lat. 19° 48′ 21″ N. lon. 85° 52′ E. by chronometers and lunar observations. Geo. site of these.

BLACK PAGODA, in lat. 19° 52½′ N. lon. 86° 6′ E., stands also at a small distance from the sea, and bears from Jaggernaut Pagodas N. 75° E., distant 14 miles; the coast between them is rather low, having a level and barren aspect, with a steep sandy beach, and may be approached to 10 or 12 fathoms; these depths being from 1½ to 3 miles off shore, the soundings not always regular. From 15 to 18 fathoms are good depths to preserve in coasting, which is about 4 or 5 miles off shore; but caution is requisite in the night, as *then*, the low coast is seldom seen, and if the lead be neglected, or *over hove*, a ship's proximity to the shore may be first discovered by the noise of the surf on the beach, which I have experienced. and the Black Pagoda.

When the Black Pagoda bears N. N. E. it appears like a high rock, rising abruptly at its east end, in shape of the gable end of a house, and a high pinnacle like a chimney projects up from its western end, from whence it gradually slopes down to the surface of the low land. There are 3 little clumps of trees or hummocks to the N. E. of it, and one to the S. W. which shew their tops just above the white sand hills that form the sea coast. This Pagoda being situated on even low land, of reddish aspect, destitute of trees, and being of less diameter, and blacker than Jaggernaut Pagodas, may be easily distinguished from the latter. They may be seen 6 leagues in clear weather, and when first discerned, resemble ships under sail, although in some views, the Black Pagoda appears like a huge rock.

From the Black Pagoda, the distance to the False Point is 16 or 17 leagues, and the course nearly N. E. by E., but from this Pagoda the coast extends 5½ leagues about E. N. E. to the principal branch of the River Gonga, called also Cuttack River, from the large town of this name situated on it at a considerable distance in the country. Off this branch of the river, a flat of hard ground projects out to seaward, on which the depth will decrease a little if a ship pass over the tail of it, but there is no danger if she keep 2 or 3 miles off shore, in from 12 to 14 fathoms; and in day-light, it may, in fine weather, occasionally be approached to 10 fathoms. Near this place, other small branches of the Gonga fall into the sea, forming low islets, and this elbow, or projecting part of the coast, called Cojung Point, has sometimes been mistaken for the False Point, as the shore from it takes a direction north 2½ or 3 miles, forming a *small* concavity in the land, nearly mid-way between the Black Pagoda and False Point, called Cojung Bay.* The whole of the coast is low to the N. E. part of this small bay, and from thence, it stretches N. E. ½ E. and N. E. by E. about 5 leagues to the False Point, very low land. From Cojung Point to False Point, the distance is about 8 or 9 leagues; the coast in this space, may be approached to 10 or 11 fathoms in fine weather, or occasionally, when working in the day time, or with the wind from the land, a ship may stand at times into 8 or 9 fathoms, about 2 miles from the shore, the soundings being mostly regular. Ships passing from the Black Pagoda to the False Point, generally keep in 14 and 15 fathoms, which is preferable to borrowing nearer the land; particularly with unsettled weather in the night, or with the wind inclining from seaward, it is prudent not to come under 13 or 14 fathoms. The coast from the latter to the N. Eastward. To sail along it.

Between the Black Pagoda and False Point, there are 40 and 45 fathoms on the edge of the bank of soundings, about 5 and 6 leagues off shore; near the point, soundings extend farther out.

* Capt. Sackville, informed me, that this concavity is very small, scarcely deserving the name of a Bay; and he has not noticed it as such, in his excellent survey of Orixa, now deposited in the East India House. In the former charts of this coast, a bay 3 leagues deep, and 5 leagues wide, was erroneously delineated in this part.

Geo. site of False Point, the contiguous land,

FALSE POINT, in lat. 20° 19′ 38″ N., lon. about 86° 46′ E., is low and woody, appearing like an island when seen from the S. E. or southward; Mahanuddy River separating it from the land on the west side, and the coast having previously a N. Easterly direction, turns sharp round at this point to N. by W., giving it an isolated appearance. In clear weather, it may be seen from a large ship's deck in 15 fathoms, at 5 leagues distance.

and the shoal bank around.

From False Point, a dry bank, with some shrubs on it, projects to the eastward, and then turns round to the northward in the form of a horse-shoe into False Bay. The water is shoal around the point to a considerable distance beyond the dry bank, the depths being only 7 and 8 fathoms about 5 miles from False Point in a N. E. and Easterly direction, and at the distance of 3 miles in a southerly direction from it, the same depths are found. The shoal bank surrounding this point, seems safe to approach occasionally to 8 or 9 fathoms, as the decrease in depth is very regular. Working along the coast in the King George, we had the False Point bearing west at sun-set distant 3 leagues, then in 11 fathoms; from this time steering S. W. and S. W. by W. with a S. S. E. wind, the depth decreased very regularly over a bottom of soft mud to 9 fathoms, ***then rather suddenly***, at 9 P. M. until the helm was put down in 7 fathoms, and when about had only 6 fathoms: the False Point was then considered to bear about N. N. W., distant 3 miles, but it is certainly not prudent for any ship to stand into 7 fathoms hereabout, as we did in a large ship during the night.

False Bay & the adjacent coast.

From False Point, the coast extends 6 or 7 miles about N. by W. and North, then taking an E. N. E. and N. Easterly direction about 8 leagues to the True Point, or Point Palmiras, False Bay is formed to the northward of the former. This bay has all over it a soft bottom of green mud, with regular depths decreasing gradually to the shore; but at the northern part of it, the quality of the ground changes from soft mud to a mixture of sand and mud, with rotten stones and broken shells, on the southern edge of the extensive sand banks and reefs environing Point Palmiras.

A little to the northward of the False Point, two branches of the river Gonga fall into the sea, and farther to the northward in the bottom of False Bay, two sand hills are situated; all the coast but these, is low and woody.

Geo. site of Point Palmiras;

POINT PALMIRAS*, in lat. 20° 44′ N., lon. 87° 6′ E., by selecting the mean of many observations taken by several careful navigators, by ☉ ☽ ✱ and chronometers, bears from the False Point N. E. ¾ N. distant 10 leagues; but from being abreast of the latter in 14 or 15 fathoms with it bearing W. N. W. the direct course is N. E. and the distance 10½ leagues to the outer edge of the bank off Point Palmiras in the same depth, with the Point bearing W. N. W. Ships must be guided by the soundings, in passing between them, as the flood sets *toward*, and the ebb *from* the shore; from 14 to 15 fathoms, are good depths to preserve with a fair wind.

description of it.

The land of Point Palmiras is low, and cloathed with Palmyra trees, having on each side of it, at a small distance, the mouth of a river; that on the south side is navigable by boats or small vessels.

In rounding the bank off the Point, the trees on the land are just discernible in 15 fathoms water, distant about 4 leagues from the shore; ships, therefore, seldom see the Point in passing, unless the weather is clear, and the reef be approached under 14 or 15 fathoms, which ought never to be done in a large ship during thick weather, or in the night.

About a league to the E. N. Eastward of the Point, lies the sandy Island Mypurra, extending east and west nearly 2 miles, and half that breadth, generally called the Island off Point Palmiras; it is situated on the N. E. part of the reef, and between it and the Point, there is a channel navigable by small coasting vessels, with a sand in the middle, dry at low water.

* Called by the natives Myparrah, from the contiguous sandy island.

To the distance of 2 and 3 leagues, or rather farther in some places, Point Palmiras is encompassed with an extensive bank or shoal, composed of rocks and sands, on which the depths are very irregular in many places, between 1 and 4 fathoms. On the northern edge, this bank is not so steep as it is to the N. E. and Eastward, for on the north side of the Island, the water shoals gradually over a soft bottom until it is approached very close. The N. Eastern side of the bank is very dangerous, being steep from 10, to 4 and 3 fathoms, about 3 and 4 miles to the eastward of the island; were a ship here, to get into 7 fathoms, she might be aground before another cast of the lead could be hove, and 14 or 15 fathoms abreast this part of the bank, is not ½ a mile from its steep verge, where there is only 2½, 3, and 4 fathoms rocks. On the eastern edge, with the Point bearing to the northward of west, it is not altogether so steep, the distance from 12 fathoms being about ½ a mile in standing on it to 4 fathoms; but even here, it would be imprudent in a large ship to borrow under 14 or 15 fathoms in the night, or under 11 or 12 fathoms in fine weather during the day. On this part of the bank, there is a reef of breakers about 4 miles to the E. S. E. of the Point, with others between it and the island, and rocks may be discerned at low water when the bank is rounded close. The southern part of this bank is more flat than any other part of its exterior limit; for here, the depths gradually decrease, and its limit on this side can only be known by the change of ground, from soft mud in False Bay, to a mixture of coarse sand and mud, with rotten stones and broken shells, upon the edge of the bank.

and the extensive bank, or reefs, by which it is encompassed.

How near they may be approached.

A ship passing False Bay in day light with a westerly wind, may steer along at discretion in 10 or 12 fathoms, but should she get into 9 fathoms and see Point Palmiras or the island off it, she ought instantly to haul out into 12 or 14 fathoms in rounding the eastern limit of the bank. When blowing strong from the S. W. or Southward, a ship with day-light, after rounding the reef or bank off Point Palmiras, may haul to the westward, and anchor to the northward of the Island* in 10 fathoms, or rather less water, where she will be sheltered by the reef until the force of the wind is abated. Instructions have been sent to the Bengal Government, to build a lofty lighthouse on this island, to guide ships round the reef in the S. W. monsoon. It is also intended, that the pilot vessels be guided in this season by the light, in keeping their stations off the Point; and ships will, by this means, discover the pilot vessels with more facility than hitherto.

Cautions requisite.

KANNAKA RIVER,† about 5 miles to the N. W. of Point Palmiras, and 2½ leagues to the westward of Mypurra Island, is wide at the entrance, but a long flat projects from it near 2 leagues to seaward, on which the depths are generally 2, 2½, and 3 fathoms. The depths within the entrance are nearly the same, and it appears that vessels drawing under 12 or 13 feet, may sail into the river at high water, if a pilot is procured; it is much frequented by small vessels, navigated by natives, who carry rice and other articles of trade from hence to Madras, and to other places on the Coromandel coast, during the favorable monsoon.

Kannaka River.

In Capt. Sackville's survey, a small river, called Domrah River, is placed 10 miles to the northward of Mypurra.

At Point Palmiras, and at the entrance of Kannaka River, it is high water about 9, or 9½ hours on full and change of the moon; the rise of tide is 10 or 12 feet on the springs, and 7 or 8 feet on the neaps.

CHURINGA RIVER, or Creek, bears from the entrance of Kannaka River nearly N. N. W. distant about 5½ or 6 leagues; the coast between them is low, and to the northward of Kannaka River, a flat dry in some places at low water, stretches out about 4 miles

Churinga River, and the adjacent coast.

* This island is said to afford good fresh-water, by digging in the sand.

† It is called Mypurra River, in Capt. Sackville's survey of Orixa.

from the shore; the depths toward the outer edge of it, decrease gradually to 2 fathoms. The Bight or Bay of Churinga, called also Kannaka Bay, affords good anchorage, in the S. W. monsoon, to the N. Westward of Kannaka flat; but the shore is all very shoal, there not being more than 3 fathoms at the distance of a league from it, and being out of the track of ships bound into Hoogly River, the anchorage under the island off Point Palmiras is preferable.

Between Kannaka and Churinga Rivers, there is said to be a patch, with overfalls on it from 7 to 10 fathoms; some persons, have thought that there is less water on it, that it lies in 11 fathoms, and is *perhaps* dangerous; but several of the pilots seem to think, there is no danger detached from the flat that lines the shore.

At Churinga River the coast forms a curve, taking a direction from thence nearly N. N. E. ½ E., and N. E. by N. about 9 leagues to Bulramgurry, at the entrance of Ballasore river: between them, there are other small rivers or creeks, and all the coast is low, with a flat stretching along it, on which, the depths are not more than 2½ or 3 fathoms above a league from the land; and in some places the banks are dry at low water ½ a mile from the shore.

To Ballasore, BALLASORE RIVER'S ENTRANCE, is in lat. about 21° 28′ N., and very little to the eastward of the meridian of Point Palmiras. From the Point, all the low coast is planted with trees until within 2 or 3 miles of the entrance of this river, which on both sides is destitute of them, having a sandy barren aspect; by this it may be known, particularly by the small sand hills on the N. E. side. When the Nilgur Hills, (situated inland to the westward) are seen, they answer as a good mark for a ship having occasion to proceed to the anchorage. With the extremity of the southernmost or Long Hill, W. ½ S. the peak of the middle one appearing highest and separated from the others W. N. W. or W. by N. ¾ N., the smallest to the N. Eastward bearing N. W. by N., a ship will have a good birth in 5 fathoms mud, with the entrance of the river about N. by W. off shore 5 or 6 miles. The bank is here, very flat, the depths being 2½ and 3 fathoms about 4 miles from the land. From the anchorage in 5 fathoms, the peak of the Nilgur Hills bear W. N. W. distant 19 miles; and from Balramgurry at the rivers entrance it bears W. 4½° N. distant 14 miles.

anchorage in the road,

A boat proceeding for Ballasore River, should carry a compass, and in crossing the bar, ought to bring the flagstaff at Bulramgurry, or the Banks-hall house N. N. W.: keeping it on this bearing, will lead her to the outer beacons, which are poles placed on each side the entrance of the bar. From hence, the channel lies directly toward the S. W. point of the opening of the river, where the passage is marked out by beacons or poles on each side, placed at convenient distances on the extremities of the shoals. At full and change of the moon, it is high water about 10 o'clock, and flows from 12 to 15 feet in common springs, but there is not more than 2 or 3 feet on the bar at low water, in the dry season; it is therefore, proper, not to attempt to pass over it until the last quarter flood, for the sea breaks high upon it during the first quarter flood, particularly in the S. W. monsoon.

and description of the river.

Peply Creek, PEPLY RIVER, or Creek, bears E. by N. from the entrance of Ballasore River, distant about 6 leagues; it is known by a pagoda on the west side of the creek, having near it a tope of trees. Small vessels passing between these places, may steer along the coast in 4 fathoms, about 2 or 3 miles from the shore, and when the pagoda bears north, they may haul in near the entrance of the creek, where there is 2 fathoms at low water betwixt it and the sand. Peply Sand, stretches directly south from the east part of the creek, into 8 fathoms, distant about 3 leagues from the shore, having 7 fathoms close to, and 3 fathoms on its outer part, but is nearly dry at low water about 4 miles off the land. A ship intending to anchor in Peply Road, to the eastward of the sand, ought to steer round its southern end in 8 or 9 fathoms, and when the pagoda is brought to bear N. N. W. she may begin to haul

and sand,

up to the N. Eastward, on the east side of the sand, and anchor with the pagoda bearing N. W. by N., in 5 fathoms water.

From Peply River, the distance is about 5½ leagues nearly E. by N. ½ N. to Beercool Creek, and from thence to Ingellee, in lat. about 21° 48′ N., the direction of the coast is first E. N. E., then about N. E.; the whole of it is low, and interspersed with sand hills. The small trading vessels from Ballasore, keep close along the coast between Peply and Ingellee, in a small channel with 2 and 3 fathoms in it at low water, formed between the sands and the shore. and the Coast to Ingellee.

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# *ENTRANCE of the RIVER HOOGLY, or CALCUTTA RIVER.*

## DESCRIPTION OF THE CHANNELS, SEA REEFS, AND SANDS.

THE EXTENSIVE BAY, formed between Point Palmiras and the S. Westernmost banks, at the entrance of the river Hoogly, generally called BALLASORE ROAD, affords good anchorage, the bottom being mostly stiff blue clay, intermixed with sand at times, or small stones. With Mypurra Island off the point, bearing about S. W., there is a spot of bright yellow clay like ochre, which is well in toward the land. Ballasore Bay or Road.

During unsettled weather in the S. W. monsoon, it may frequently happen that a ship cannot round the reef off Point Palmiras so near as intended, to enable her to anchor on the north side of it in smooth water; in such case, she ought, when round the reef, to haul to the N. Westward into 15 or 14 fathoms, and anchor. Here, ships ride easier and more safe than farther to the eastward; being in deep water, the sea runs fair, whereas, it runs high and short about the sea reefs, and in the channels between them, with stronger tides than in the road. Where to anchor in the S. W. monsoon.

PEPLY SAND, already described, is the westernmost of the numerous banks that project to seaward, from the entrance of Hoogly River. Peply Sand.

WESTERN BRACE, begins about 4 leagues to the N. E. of Peply, and 2 or 3 miles from the shore, from whence it extends 7 leagues nearly S. by E., to lat. about 21° 12′ N. On the north part it is very shoal, and about 4 miles broad, but becomes more contracted in every other part; from 2½ or 3 fathoms at low water about the middle of it, the depths gradually increase to 7 or 8 fathoms on its southern extremity, where it is insensibly lost in 9 fathoms soft ground. The south end of Peply Sand, is directly west from the middle of the Western Brace, distant about 3 leagues, with 7 and 8 fathoms soft ground between them, shoaling on the edge of the latter to 5 and 4½ fathoms. Western Brace.

EASTERN BRACE, is about 2 leagues to the eastward of the former, having on it about 1 fathom less water, and about half-way between their northern parts, there is another shoal with 1½ fathom on it at low water, and from 4 to 5 fathoms on its southern extreme, in lat. about 21° 22′ N. This shoal, seems of *recent formation*, not being delineated in the charts, although upward of 2 leagues in extent nearly north and south. Between the north end of it and the shore, and on each side between it and the braces, there are channels with 3 and 4 fathoms, ending in the Kell. This is a swatch of soft ground, about 4 miles broad, Eastern Brace, and another sand, and the Kell.

formed between the braces, with the shoal last mentioned to the northward. The bottom in the Kell is generally very stiff clay, the depths from 5 to 7 fathoms at low water. The western sea reef, being a continuation of the Eastern Brace, they may be considered as the same sand.

Barabulla. BARABULLA, and another parallel sand, begin at the north end of the Eastern Brace, from whence they stretch northward nearly to Ingellee, having very shoal water on them, and $2\frac{1}{2}$ or 3 fathoms in a channel that divides them, the Barabulla being the easternmost of the two, and forms the west side of the *old* channel called the Fair Way.

Long Sand. LONG SAND, forms the east side of the same channel, extending from lat. about 21° 15′ N., to the northward of Ingellee, being about 11 leagues in length, of various breadth, with many patches on it that dry at low water. The southern part of it is flat, having 5 and 6 fathoms regular depths, and on each side of this extremity they are nearly the same.

Gasper Sand. GASPER SAND, the most extensive of any in the entrance of Hoogly River, stretches from near Mud Point, in lat. 21° 57′ N., about S. by W., and this upper part generally called the Mizen, is broad and very shoal. It *formerly* occupied nearly the whole of the river in this place, leaving only a small passage along the eastern shore, and the proper channel for large ships near the western shore, where the Europe ships used to moor in 6 and 7 fathoms close to the land at Kedgree; but between this place and the eastern shore, there are *now* two other sands beside the Mizen, separated by channels of considerable breadth. The westernmost of these is Kedgree Sand, which is situated exactly in the place where large ships used to moor in 5, 6, and 7 fathoms, although that road is now filled up by the sand, having not more than $1\frac{1}{2}$ and 2 fathoms on it at low water.

Sagor Road, To the southward of the Mizen, Gasper Sand is very narrow; here ships cross over a gap in it when passing from Sagor Road to the proper channel leading up the river. In Sagor Road the depths are 6 and 7 fathoms: it affords the best anchorage of any place near the entrance of the river, although it is not very safe during stormy weather, the tides running strong on the springs. This road is formed between Sagor Island, and Gasper Sand, which here, bears properly that name; and opposite to the S. W. end of Sagor Island, it bends to the S. S. Eastward, terminating in the upper end of the Eastern Sea Reef, which is a continuation of it, and extends to lat. 21° N. The eastern edge of the Long Sand nearly joins to the S. W. part of Gasper Sand; and another dangerous sand, nearly dry at low water in some parts, lies at a small distance from the latter, but generally considered as the tail of the Gasper, and is 3 leagues south from the S. W. end of Sagor Island. Directly abreast of this, a narrow spit called Sagor Middle Ground begins, and stretches a considerable way to the southward; between this and the former, about 12 years ago, was the proper channel for ships, but this is now nearly filled up, and another channel has opened to the westward, between the tail and the body of that sand, which is used at present by all ships entering the river by Sagor Channel; and this new passage through the Gasper Sand, has been named Thornhill's Channel.

and the contiguous Sands.

Thornhill's Channel.

The entrance of this New Channel, is about 9 miles south from the S. W. point of Sagor Island, pointed out by 2 buoys bearing east and west of each other 1 mile distant, the westernmost of which is painted *red* and the other *black*, and the depths between them are from $4\frac{3}{4}$ to $5\frac{1}{4}$ fathoms. These buoys are in lat. 21° $26\frac{1}{2}$′ N. and the channel from them lies N. by W. to Sagor Road, on the west side of the black buoy placed about 6 miles from them in the upper part of the channel.

About $2\frac{1}{2}$ or 3 miles to the N. E. of the 2 buoys which point out Thornhill's Channel, there is a buoy at the eastern part of the Gasper Sand, in the old channel; and 2 miles more to the N. E.ward, lies another buoy at the western edge of Sagor Middle Ground, pointing

out the eastern boundary of that channel; but there is now a Middle Ridge with 2¾ fathoms water on it, in the old channel, which commences outside of these buoys, and extends N. N. W. nearly to the south part of Sagor Island.

WESTERN SEA REEF, is a continuation of the Eastern Brace, extending nearly S. S. E., to lat. 20° 59′ N., and bending more to the S. Eastward near its southern end: It is in general about 4 miles broad, the depth at low water, 2 fathoms on the north part, (where it bears the name of Eastern Brace) deepening gradually to 3 on the middle part, and to 4 fathoms farther southward. On the southern extremity, or tail of this reef, the depths are 6 and 7 fathoms, with 10 and 12 fathoms near it on the west side, and 9 or 10 fathoms to the eastward, between it and the tail of the Eastern Sea Reef. Western Sea Reef is a continuation of the Eastern Brace.

EASTERN SEA REEF, being a continuation of Gasper Sand, extends about S. S. E. to lat. 20° 58′ or 20° 59′ N., the tail of this reef being nearly on the same parallel as that of the former, and are distant from each other 8 or 9 miles. This reef is not so broad as the other, but the depths on it are similar, generally 2 fathoms at low water, from the northern part, where it joins Gasper Sand, for a great way to the southward, then gradually deepening to the southern extremity, where on the tail of it, there is 6 or 6½ fathoms at low water. As these two banks project a considerable distance farther to seaward than any other, they are the principal guides for directing ships into Sagor Channel, now in general use; the passage over the Braces into the Western or *Old* Channel, generally called the Fairway, being almost exploded. The sands having greatly augmented, with a considerable decrease of depth in the Western Channel, the navigation there, has become dangerous; pilots, therefore, do not take ships into the river by that channel, unless they draw under 15 or 16 feet water. Eastern Sea Reef, Particular description.

The Sea Reefs are both steep toward their western edges, but the water shoals gradually (though quick) on their eastern sides; in approaching them from sea, the depths decrease regularly over a bottom of soft mud, and the bottom is of the same quality in the channels between them.

Upon the Sea Reefs, the bottom is hard sand, with bright specks like steel filings; and on the ebb tide, or near low water, the lead rebounds from them similar to striking on a rock.

The difference in depth between high and low water on them at spring tides, is generally about 10 or 11 feet; and the water is highest over the ground, upon the Sea Reefs, and in Ballasore Road, about 9 or 9¼ hours on full and change of moon.

At anchor, on the tail of the Eastern Sea Reef in 6 fathoms, when the observed lat. was 21° 02′ N., the lon. measured by chronometers from many lunar observations, was 88° 16′ E.; and the same station I made 9½ miles west from Calcutta by chronometers, which will place the tail of this Sea Reef about the same lon., allowing Calcutta in lon. 88° 25½′ or 88° 26′* E., agreeably to recent astronomical observations made by Dr. Dinwiddie, and other persons. Geo. site.

About 7 or 8 leagues to the southward of the tails of the Sea Reefs, the depths are from 50 to 60 fathoms on the edge of soundings; from thence, the decrease is regular over a bottom of soft mud, to 9 and 10 fathoms close to their tails, and sudden to 6 and 7 fathoms hard ground upon them.

On the east side of the tail of the Eastern Sea Reef, in lat. 21° 0′ N. to 21° 4′ N., the depths are generally about 9 and 9½ fathoms at low water, and 10½ or 11 fathoms at high

* The Rev. Wm. Smith made Calcutta in lon. 88° 28′; Mr. Magee made it in 88° 24′; and Capt. Ritchie made it in 88° 26′ E.; the mean of these, places it in lon. 88° 26′ E. By ⊙ meridian alt. taken by reflection in water, in 1801, I made the lat. of Calcutta 22° 34¼′ N. In most charts the tail of the Eastern Sea Reef is placed on the meridian of Calcutta, which seems to be more easterly than its true relative situation.

water, in the entrance of Sagor Channel; although here, in most charts, 7 and 8 fathoms are the depths marked. The first buoy seen in Sagor Channel, called the Reef Buoy, is generally situated close to the eastern edge of the Sea Reef, in lat. 21° 16½′ N., from whence the course is about N. N. W. ½ W. to the buoys of Thornhill's Channel 10 or 11 miles.

Sagor Sand. SAGOR SAND, extends from the S. E. part of Sagor Island, about S. by E., afterward S. S. E., in a parallel direction to the Eastern Sea Reef; it is very dangerous, with patches dry at low water toward the land, and there is not more than 5 or 6 feet on it at low water, for a great distance to the southward. The tail of this sand, in most charts is placed in lat. 21° 15′ N., but it is *now* considered dangerous at low water about that lat., and seems to have greatly increased in length, for the tail of it at *present*, terminates in a narrow point, in lat. about 21° 6′ or 7′ N., where the depth is between 4 and 5 fathoms at low water, mostly hard sand. From its southern extremity, the depths decrease gradually to the northward on Sagor Sand, as on the Sea Reefs; the quality of bottom is also similar, hard sand mixed with bright specks like steel filings, but Sagor Sand is rather of a darker colour. This sand is nearly steep to, on both sides, and the breadth of the channel between it and the Eastern Sea Reef, is in general about 5 miles.

As Sagor Sand extends much farther to the southward than formerly represented, many ships mistaking the hard soundings, they get on it (in coming from the eastward in the N. E. monsoon) for the soundings of the Eastern Sea Reef, work up in the entrance of Lacam's Channel, on the east side of the former sand, until the clump of trees on Lighthouse Point is seen; by which, they discover that they are to the eastward of Sagor Sand, instead of being on the west side of it, in Sagor Channel, as they had previously supposed.

Although Sagor Sand, projects not so much to the southward by about 2½ or 3 leagues as the Sea Reefs, it stretches much farther out than any other sand in the entrance of Hoogly River, and may therefore, be considered as the *third* Reef that extends far out into the sea; the Western Sea Reef being considered as the 1st, the Eastern Sea Reef as the 2d, and Sagor Sand as the 3d Reef.

and Sagor Island. SAGOR, OR SAUGER ISLAND, extends N. N. W. from lat. about 21° 34½′ N. to 21° 41½′ N., and bounds the great entrance of the River Hoogly on the east side, being 7 or 8 miles in length, and about half that breadth; near the east side of it, there is a small elevation, but like all the land hereabout, it is generally low.

The creek that separates it from the other land, is dry at low water at the north end; there, the rise and fall of tide on the springs is about 4 fathoms, which is greater than at any other place about the head of the bay.

There is an ancient pagoda, and a large tank of fresh water on the east side of the island, held in great veneration by the Hindoos, who go there in great numbers once every year to sacrifice. The Brahmins call the Island Gongo-Sagor, but the natives generally understand Gongo-Sagor to be the whole of the land that separates Channel Creek from the western branch of Hoogly River, except the small island contiguous to the north end of Sagor, called Coxe's Island, which is near a league in length, and 2 miles broad, and bounds the N. E. side of Sagor Road.

Inside Channel. CHANNELS *AT PRESENT* NAVIGABLE INTO THE RIVER HOOGLY, are first the INSIDE CHANNEL, stretching from Ballasore close along the shore to Kedgree, inside of, or to the north-westward of all the shoals; with depths in it, generally from 2 to 3 fathoms at low water, and is used by the small coasting vessels, which are navigated by natives, and draw little water.

FAIRWAY, OR WESTERN CHANNEL, bounded on the east side by the Long Sand, and beyond its extremity, by the tail of the Eastern Sea Reef; on the west side by the Barabulla, Eastern Brace, and Western Sea Reef, and a small shoal called the French Flat, situated near the edge of the Eastern Brace, in lat. 21° 19′ N., where the outermost buoy of this channel used to be placed. The 2d, or Fairway Buoy, was generally placed 5 or 6 miles about N. N. W. from it, near the edge of the Eastern Brace, in lat. about 21° 25′ N., but the buoys are sometimes taken up and placed differently, as the sands are liable to change continually, in this great river. Fairway, or Western Channel.

Ships passing out by the Fairway, used to proceed down betwixt the French Flat, and the tail of the Long Sand, and there, the channel became wider between the tails of the Sea Reefs, in proceeding out to seaward.

Bound into the river, by the Fairway Channel, the manner of proceeding was different; for after running into Ballasore Road, and finding a pilot, the practice was to cross over the middle of the Western Brace into the Kell,* where the pilots generally anchored ships at the approach of night, or when they judged the depth of water on the Eastern Brace not sufficient for crossing. When the flood answered, the Eastern Brace was generally crossed in lat. about 21° 20′ to 21° 23′ N., a little to the southward of, or abreast the Fairway Buoy; being then in the channel, a course was steered from this buoy to the N. N. Eastward for the Lower Buoy of the Barabulla, between which sand to the westward and the Long Sand to the eastward, was the track formerly pursued in proceeding up the river. This channel cannot be navigated with safety at *present*, by ships drawing above 14 or 15 feet water. Route pursued to enter this channel.

MIDDLE CHANNEL, formed between the Long Sand to the westward, and the Eastern Sea Reef and Gasper Sands to the eastward, is narrow, with only 3 fathoms water in several places; it is, therefore, seldom navigated by vessels of any description. Middle Channel.

SAGOR CHANNEL, OR EASTERN CHANNEL, formed by the Eastern Sea Reef on the west side, and Sagor Sand to the eastward, is that at *present* in general use, by ships entering or departing from the River Hoogly, and it lies nearly in a N. N. W. direction, and opposite. The lower, or outermost buoy in this channel, called the Reef Buoy, is *now* generally placed in 5½ fathoms, near the edge of the Eastern Reef, in lat. about 21° 16½′ N. It is *at present* a red one, of the spire form, invented by the sagacity of Mr. Waddel. They ride greatly elevated, resembling beacons when viewed at a considerable distance, and are discerned much farther than those of the common construction. When a few miles to the northward of the Reef Buoy, the trees on Sagor may be seen from the poop of a large ship. About 10 or 11 miles N. N. W. ½ W. of it, 2 other buoys of the same form, placed on the edges of the sands, point out the entrance of the new channel, which is here, contracted by the tail of Gasper Sand on the east side, and by a projecting part of the Reef to the S. W., which here forms an elbow, making it necessary to steer about N. W. in approaching the buoys to enter the channel. Sagor Channel.

Near the edge of the Eastern Sea Reef, in lat. 21° 21′ N. there is a spit with 3 fathoms at low water, where a buoy was formerly placed.

A ship arriving at the entrance of Sagor Channel, during favorable weather in the N. E. monsoon, and certain of her situation, may work up a considerable way with safety, in search To work up into it in the N. E. monsoon.

* The bottom being stiff clay in the Kell, and a heavy ground swell tumbling into it at times in the S.W. monsoon, ships were frequently unable to weigh their anchors, and cross over the Eastern Brace, until the weather became more moderate; this occasioned a great loss of time, and not seldom, of anchors. Proceeding into the river, by the western channel, we lost 2 anchors in the Kell, and had our capstan broken, by the pitching of the ship when endeavouring to weigh them. I have known other ships arrive at Diamond Harbour without an anchor to let go, having lost all they had in Ballasore Road, and in the Kell.

of a pilot. In doing this, she may borrow on the edge of the Eastern Sea Reef in tacking from the west side of the channel, as the water shoals regularly upon the verge of it on that side, although rather quick in some places. The depths in mid-channel, from 8½ and 9 fathoms, between the tail of the Sea Reef and the tail of Sagor Sand, will decrease regularly as she works to the northward, to about 6 fathoms when near the Reef Buoy. Here, the depths are nearly the same from side to side, there being only about ½ a fathom more water toward Sagor Sand, than there is in the western side, near the Sea Reef.

When near the Reef Buoy, or in lat. about 21° 14′ N., a ship ought not to stand so near the edge of Sagor Sand as to shoal her water, in working farther to the northward; for it is steep to, and dangerous to borrow upon. The best guide is to take the soundings from the edge of the Sea Reef, which may be approached to 5, or a ¼ less 5 fathoms in working, until 5 or 6 miles to the northward of the Reef Buoy, or until the buoys on the tail of Gasper Sands are seen; then, the trees will be visible on Sagor Island, from the poop or mizen shrouds, if the weather is clear, and she ought to anchor until a pilot is obtained. Here, she will have 4½ or 5 fathoms at low water in the proper track, and it would be imprudent to venture farther up the channel without a pilot.

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## *DIRECTIONS to approach the RIVER HOOGLY; WINDS, and CURRENTS, or TIDES.*

When light southerly winds commence in the head of the Bay.

SOUTH-WEST MONSOON, is preceded by Southerly and S. W. winds, which generally commence about the entrance of Hoogly River, off Point Palmiras, and along the northern part of the Coast of Orixa, about the latter part of February, or early in March; but not so early on the N. E. side of the bay.

Along the head of the bay, in the vicinity of the sands and rivers, from December to March, or until the southerly winds set in strong, there are frequent light airs and calms, with a very smooth sea. These calms or faint airs, are liable to happen day or night, but the breeze generally fails with the setting sun, and a calm continues in the first part of the night. About midnight, a gentle breeze often commences at S. E. or Southward, veering gradually to W. and N. W. in the morning, and continuing this circular course, increases in strength from the northward about 8 or 9 A. M., with the rising sun.

Period of the S. W. monsoon, or stormy season.

Toward the end of March, or early in April, the Southerly or S. W. winds, begin to set in regular and strong, with cloudy weather, and sometimes rain; but the stormy weather of the S. W. monsoon, with hard squalls and much rain, is seldom experienced until about the middle, or latter part of May, which continues until September. In June and July, the weather is most severe, for toward the middle of August, it is sometimes fair for several days together, although hard gales have also been experienced in this month, in some seasons. In September, the S. W. monsoon being on the decline, the weather is generally moderate and cloudy, with little rain; toward the latter part of this month, or early in October, the southerly winds fail, and are followed by variable breezes; and sometimes a storm is experienced all over the bay in September or October, previous to the setting in of the N. E. monsoon.

Currents near the entrance of Hoogly River.

THE CURRENT, on the coast of Orixa, sets to the N. E. toward the entrance of Hoogly River, after the commencement of southerly winds, in February or March; about the middle of July, the freshes from the rivers, occasioned by the rains, generally produce a

current setting round Point Palmiras to the southward; after which, a small drain is often found to set to the S. Westward, until January following.

Off Point Palmiras, weak tides are often experienced on the neaps, which have considerable strength on the springs, the flood sets round the reef along the coast, into Kannaka Bay, but at the distance of a few leagues from the reef, the flood sets N. E. and N. E. by E. in the S. W. monsoon.

A ship, therefore, passing the reef at a great distance, will be set to the eastward; and when near it, will be set by the flood to the N. Westward, into Kannaka Bay.

Directions to approach it in the S. W. monsoon.

When the southerly winds begin to have strength, during the latter part of March, or early in April, the weather is generally hazy, preventing the land from being discerned unless it is very near, nor can observations be always obtained. It is therefore, proper, for all ships bound to the River Hoogly in the S. W. monsoon, to fall in with the coast of Orixa well to the southward, about Pondy, or between it and Ganjam, where the land is of considerable height. They ought certainly not to exceed the lat. of Jaggernaut Pagodas, before getting in with the coast.

When a ship's distance from the land is not correctly known, at the time she is to the northward of lat. 18° N., it will be prudent to haul in, to get a sight of the coast, if it be day-light; in the night or in thick weather, the lead will be a sufficient guide, when it is attended to with care. Although the bank of soundings extends but a few leagues from the land, there is generally from 30 to 35 fathoms about 2 or 3 leagues off shore, between the high land of Pondy and the Black Pagoda; if therefore, the lead is hove every half hour, when the rate of sailing is not great, it will give timely warning in approaching the coast. About Ganjam, the water shoals fast under 20 fathoms toward the shore.

Having seen the land, or got into soundings, a ship may steer along the coast, keeping in 18 or 20 fathoms in the night, or with unsettled weather, until abreast of Manikpatam; she ought then to haul into 14 or 15 fathoms if it is day-light, and the wind favorable, to get a good sight of Jaggernaut and Black Pagodas, in passing. They will be discerned from 17 or 18 fathoms, although the weather is hazy, but with a commanding breeze in day-light, the coast hereabout may be approached with safety to 12 or 13 fathoms, about 3 or 4 miles from the shore.

As the land is low and sandy close to the sea, it will not be seen in the night, unless a ship is very near; and in hazy weather, the noise of the surf on the beach would probably be the first indication of danger; it is, therefore, prudent, in the night not to come under 15 fathoms, nor to deepen above 17 or 18 fathoms, which depths may be preserved by attending to the lead, and running under easy sail.

It must be remembered, that from Manikpatam to 4 or 5 leagues beyond the Black Pagoda, the direction of the coast is generally between E. by N. $\frac{1}{2}$ N. and E. N. E.; and from this Pagoda the course is about N. E. by E. to False Point, distance 16 or 17 leagues.

Being 3 or 4 leagues past the Black Pagoda, a direct course should be followed to obtain the proper soundings off False Point, taking care not to haul into Cojung Bight or Bay, about half-way between them, which, although small, has sometimes been mistaken for False Bay; this cannot happen if the Jaggernaut or Black Pagodas are seen, and the distance from them attended to. As the flood inclines toward the shore, and the ebb from it, in steering for False Point the lead must be the principal guide; 14 and 15 fathoms are good depths to preserve with a fair wind, and the bottom will generally be green mud, mixed at times with brown sand and shells.

The depths decrease gradually toward the bank surrounding False Point, but it is prudent to keep in 14 or 15 fathoms when passing it in the night, or in 16 fathoms if the wind is S. Easterly.

When abreast of False Point, in 14 or 15 fathoms, the bottom in some places is coarse brown sand and shells, with black specks; in other places, mud and sand; but to the northward of this point, all over False Bay, the bottom is very soft green mud.

With False Point bearing W. N. W., in 14 or 15 fathoms, the course is N. E. 10 leagues, to clear the bank off Point Palmiras, but as the tides affect a ship laterally, the lead is the only certain guide, and she ought to keep in 14 or 15 fathoms with a commanding breeze, or in 16 fathoms if the wind is S. Easterly.

After passing False Point, and getting soundings of soft green mud, these will continue in crossing the southern part of False Bay; but when 5 or 6 leagues from the former point, in 15 and 16 fathoms, the bottom changes from soft mud to reddish sand and shells, on the southern part of the extensive bank surrounding Point Palmiras. Keeping in 15 fathoms in rounding the bank, the bottom will continue nearly the same, red or brown sand with shells, until Point Palmiras is abreast, bearing about W. N. W.; then the sand is intermixed with black specks and gravel stones, which are the soundings of the reef. When near the edge of it in 13 or 14 fathoms, the sand is coarse with gravel, but farther out in 17 or 18 fathoms, it is generally of finer quality, intermixed with black specks and shells.

These soundings of the reef, are considered the best guide to point out when abreast of Point Palmiras in the night, or in thick weather; from whence, it is proper to haul up N. N. W. for the station of the pilot vessels in 15 or 16 fathoms in Ballasore Bay, or Road. It, however, has been often experienced, that ships after having rounded Point Palmiras in 17 fathoms, and deepened into 19 fathoms, hauled up N. N. W. for the road, but were carried over toward the Western Sea Reef by a strong ebb tide, which sets out of the road to the S. E., and the flood to the N. W.,* during the S. W. monsoon.

False Point has sometimes been mistaken for Point Palmiras, and the latter sometimes for the former, whereby several vessels, in the first case, have been wrecked on the shore, by hauling into False Bay instead of the Bay of Ballasore, and others have got to the eastward on the sea reefs by keeping too far from the land. To avoid either of these extremes, the following remarks may be useful.

Cautions to be observed in rounding the reef off Point Palmiras.

To round both the False and True Points, 15 fathoms is a good track, and also in crossing the bay between them; this depth is far from danger off the former, and also when Point Palmiras bears well to the northward, but when this Point is bearing to the southward of west, the 15 fathoms track is not far from the edge of its reef; for here, the water shoals suddenly from 10 to 7 fathoms, then 2½ or 3 fathoms rocks, in some places.

If the Pagodas, or the coast near them, or Manikpatam has not been seen, and in steering along in 14 or 15 fathoms, a ship get soundings of sand, shells, and black specks, which are thought to be those off False Point, but uncertain whether they may not be those off Point Palmiras, her situation not being correctly known. To determine this, it may be observed, that the water will not deepen in steering N. E., from having 15 fathoms off the False Point; but in steering the same course from having 15 fathoms on the edge of the bank off Point Palmiras, the water will deepen gradually to 17 and 18 fathoms; she ought then, to haul to the N. N. W. or N. Westward, until she get into 16 or 15 fathoms on the western side of Ballasore Road, in which depths, the pilot vessels generally anchor at night, during the S. W. monsoon.

If blowing strong at S. W. and rounding the reef off Point Palmiras in day-light, a ship may steer along the edge of it in 12 or 14 fathoms, taking care not to approach the N. Eastern part under 12 or 13 fathoms, where it is dangerous and steep under 10 or 11 fathoms. When round that part, she may haul to the N. W., and anchor to the northward of the Sandy Island Mypurra, where she will be sheltered from the sea by the reef.

Another guide to know the soundings off the False Point from those off Point Palmiras, may be observed. If in 15 or 16 fathoms, abreast the former, a ship steer north, the depth

* The flood only sets to the N. W. and N. N. W., in the vicinity of the reef; for a few leagues farther out, in 19 or 20 fathoms, it sets frequently to the N. Eastward, or becomes a constant N. Easterly current in blowing weather.

will soon decrease over a bottom of soft mud or green ouze, in False Bay; but from 15 or 16 fathoms abreast of Point Palmiras, the water will not shoal steering north, but rather deepen, if a ship is clear of the N. Eastern extremity of the reef. If a ship haul up too soon for Ballasore Road, the water will shoal suddenly on the N. Eastern edge of the reef, over a sandy bottom; she ought in such case, to edge out immediately into 15 or 16 fathoms, the bottom then, in the fair track, will soon change to stiff blue clay, mixed with sand and stones, or at times with shells; and this is, in general, the quality of the ground to the northward of Point Palmiras, in the bay of Ballasore.

A lighthouse intended to be built on Point Palmiras.

The lighthouse intended to be erected on Point Palmiras, will be of great utility to guide ships round the reef by day or by night, when visible; for, by the bearing of the light, they will be enabled to borrow on the edge of the reef where the soundings are regular, and avoid the steep parts at its N. E. end. When clear of this extremity, the light will answer as a farther guide to conduct them into smooth water, where they can anchor in 9 or 10 fathoms under lee of the reef, when the light is brought well to the southward.

Intended change of pilots station.

It is also said, that after the lighthouse is built, this anchorage under the lee of the reef of Point Palmiras, is to be adopted as the proper station for the pilot vessels to ride during the S. W. monsoon, when the weather is stormy. It is probable, that *then* some pilots will always be found at their station, for hitherto, ships have frequently rode in Ballasore Road for several days together, in danger of losing their anchors, all the pilot vessels being in the river, which often happens in blowing weather.

Although the lighthouse may be erected on Point Palmiras, it will sometimes happen by night or by day, that thick rainy weather will prevent the light, or lighthouse, from being discerned; consequently, at such times, ships will have no guide but the soundings in rounding the reef, as is the case at present. When this happens, they may be liable to fall to leeward of the anchoring station under the point, if none of the pilot vessels are found at their stations in the offing. For although these vessels may in stormy weather anchor under Mypurra Island and the adjoining reef, it is intended, when the weather will permit, that they keep under sail in a line directly east from the lighthouse.

Their present station in S. W. monsoon.

When any pilot vessels are in Ballasore Road during the S. W. monsoon, they generally anchor in the evening in from 13 to 15 fathoms water*; in the morning they weigh when the weather will permit, and traverse the road in search of ships during the day: but the following instructions, issued by the Master Attendant at Calcutta, to the pilot vessels, will best point out their present cruizing station.

Cruising ground of the Pilot Vessels at the entrance of Hooghly River.

1st. The vessel under your charge, being now ready for sea, equipped, and completely stored for a cruize of three months, you are hereby directed to proceed out with her into the roads with all practicable expedition, in order to cruize (for the general benefit of the trade resorting to this Port) off the outer edge of the reef off Point Palmiras, bringing the Point to bear by sight or computation West, which position will place you in about 16 fathoms water (the ground composed of sand and gravel, with broken shells and black specks), or in lat. about 20° 43′ N. and this line is to be the Southern boundary of your cruizing station during the S. W. monsoon.

2d. As the proposition above assigned is invariably passed or crossed by all ships and vessels bound into the River Hooghly, during the S. W. monsoon, it is therefore desirable that you should keep as near it during the continuance of your cruise, as the state of the winds, weather, and tide will admit;—all considerations which comprehend the security of the vessel under your charge from the enemy, and other disasters, are left to your discretion, as the necessary consequence of the dependence placed in your zealous and faithful execution of the important trust confided to your management.

* They mostly anchor in sight of each other, in an east and west line, and if three vessels are out, spread about 8 or 9 miles.

3d. On the change of the seasons, you are to quit the station prescribed in the preceding paragraph, and to cruise off the tail of Saugor Reef, in lat. 21° N. lon. (about) 88° 40′ E., being particularly cautious in guarding against the designs of the enemy's cruisers.

Directions for discovering them.

Ships, therefore, in the S. W. monsoon, should not go under 15 or 14 fathoms toward the Western Brace, where they ought to anchor in the night; or if blowing hard, they may keep nearer the western shore, and anchor in 11 or 12 fathoms. When the weather is moderate, they ought to keep under sail in the day, with the ebb tide, standing occasionally to the eastward to 11 or 12 fathoms, near the tail of the Brace, crossing the road in 14 and 15 fathoms. By traversing the Road in the day, when any pilot vessels are there, the chance of soon discovering one, will be much greater than by remaining at anchor; but attention to the set of the tides is requisite, for a ship keeping under sail with strong flood tides on the springs, might be liable to get over to the eastward, upon, or near the Western Sea Reef.

The pilot vessels are generally snow rigged, with a small jigger mast on the stern, and the first that is spoken with, by any ship, if it is not their *turn* to take charge, they will direct her where to find the pilot, whose vessel will shew a small red flag at the gaff end.

A vessel has been recently built, purposely for a floating light, and to be stationed on the western edge, or tail of the eastern sea reef, which will be an excellent guide for ships approaching the eastern, or Sagor Channel: another floating light, it is said, will be placed at the tail of the Gasper Sand, to lead ships into Thornhill's Channel, and a third light to be shewn by the mooring vessel in Sagor Road.

Cautions relative to approaching the sea reefs.

Should a ship get accidently on the tails of any of the Sea Reefs, she ought not to stand into shoal water, for the sea runs high upon them in the S. W. monsoon; it will be prudent to tack, or haul off immediately into deep water, or anchor until the ebb tide enables her to work to the southward clear of them.

In September, when the strength of the monsoon is abated, it is not considered so dangerous to stand to the eastward into 12 or 14 fathoms near the tails of the sea reefs, particularly in favorable weather; by doing so, pilots may at times be found, bringing out ships by the Eastern Channel; but it is only when no pilots are found in the road, and the weather settled, that a ship may venture to stand near the tails of the sea reefs in search of one, and it ought not to be done in the months when the monsoon generally blows strong.*

Route to enter the Eastern Channel.

Since the Western Channel has become dangerous for large ships, by a decrease in the depth of water, and the Eastern, or Sagor Channel, now adopted, the pilots to enter it, in conducting ships from Ballasore Road in the S. W. monsoon, steer to the eastward, crossing over the tails of the Western and Eastern Sea Reefs; the soundings obtained on these, being their principal guide.

This *most eligible* track to enter the River Hoogly, was pointed out by Mr. Lacam, and recommended by him near 40 years ago; but although then, considered by some persons as a visionary scheme, has at last been adopted from necessity.

N. E. monsoon,

NORTH-EAST MONSOON, generally commences early in October, along the head of the Bay, or about the middle of that month, but not so early in the central and southern part, between the Nicobar Islands and Ceylon; for there, S. W. and Westerly winds prevail frequently in October, and sometimes in November.

In the head of the bay,

To the northward of lat. 17° or 18° N., the winds are often very light in the N. E. mon-

* Some navigators, however, well acquainted with the river, have crossed over the sea reefs, without pilots, in ships at an easy draught of water. The Sir William Pultney, about 500 tons burthen, being light with troops on board, arrived in Ballasore Road 10th of July, 1806; finding no pilot vessels there, she weighed at day-light, crossed the western sea reef in 5 fathoms, and steering on to the eastward, soon after, the Eastern Sea Reef in 4 fathoms: at noon she hove to, in 6 fathoms soft ground, in Sagor Channel, lat. observed 21° 15′ N. directly after the reef buoy was seen, then made sail up channel, passed the Gasper buoy at 4 P. M. and half an hour after got a pilot.

soon, sometimes inclining at N. E., but more frequently between N. N. E. and N. by W. Calms and faint airs prevail much in the north part of the bay, particularly in soundings along the head of it, and along the coast of Aracan, during the whole period that the N. E. monsoon predominates in the open sea.

THE CURRENTS, in the early part of this monsoon, generally set to the S. Westward in the northern part of the bay; and near the coast of Aracan, Southerly or S. Easterly currents prevail more than any other, throughout this season. In the open sea, well out from the coast, there is seldom any southerly current, but generally a drain to N. W. or N., and sometimes to N. Eastward. and currents in that season.

Ships bound to Hoogly River during the N. E. monsoon, were formerly directed to keep close along the coast of Aracan to lat. 21° N., or in sight of the White Cliffs, and from thence, to steer W. or W. by N., between lat. 21° N., and 21° 20′ N.; which route is not advisable to be followed. Track along the Aracan Coast not advisable.

This circuitous route was chosen, that ships might be enabled to anchor in moderate depths when calms and faint airs prevailed, and to prevent the currents occasioned by the freshes out of the rivers from drifting them to the southward out of soundings. These southerly currents, are, however, seldom experienced, except in the vicinity of the land, where also faint airs and calms prevail more than farther out in the open sea; on which account, it seems advisable to keep at a moderate distance from the Aracan Coast, and the N. Eastern angle of the bay, in proceeding to the River Hoogly in the N. E. monsoon.*

Whether from the vicinity of the Andaman Islands, or from Cape Negrais, a ship has departed, she ought to endeavour to make as much *northing* as the winds will permit, taking care not to get too far to the westward; this will be avoided, by tacking to the eastward at times, when the wind veers more northerly than usual. Directions for sailing toward the River Hoogly in the N. E. monsoon.

In an indifferent sailing ship, or when the longitude is not correctly ascertained by chronometers or otherwise, it may be prudent to endeavour to get into soundings, about 14 or 15 leagues to the eastward of Sagor Sand, then cross over the Swatch, or chasm in the bank, which will point out the true situation.

THE SWATCH OF NO GROUND, extends nearly N. by E. from lat. 21° to 21° 22′ N., and is about 5 leagues broad, but its shape and dimensions are not *exactly* determined; there are no soundings to be got in it, with from 150 to 50 or 60 fathoms of line. Its northern extremity is distant from the land only about 5 leagues, with depths between them from 13 fathoms near the former, decreasing to 3 fathoms toward the land. Round the other parts of it, the depths are generally from 40 to 20 fathoms. The western edge of the Swatch in lat. 21° 12′ N., is about 11 or 12 leagues to the eastward of Sagor Sand. Swatch or no ground.

Ships which get into soundings far to the eastward, ought to borrow toward the land to 17 or 20 fathoms, that they may be enabled to anchor in moderate depths when requisite, or benefit by the tides, when favorable for proceeding to the westward. For in deep water calms are frequent, with a drain of easterly current in the N. E. angle of the bay, and the influence of the ebbs setting to the southward, reaches farther out than that of the flood tides. Current.

TIDES AND CURRENTS, at the mouth of Murjattah River, situated nearly half-way between Point Palmiras and Chittagong, the flood sets due north, but between it and the mouths of the Ganges and Megna Rivers, as the distance to the eastward is increased, the more the flood sets to the eastward of the north point. In like manner, between Murjattah and direction of tides along the head of the bay.

* Brief instructions for ships proceeding into the Bay of Bengal during this monsoon, have been given in a former section of this work.

and Hoogly Rivers, the tide inclines to the westward of north, and the latter part of the flood, sets nearly west.

and near the tails of the sea reefs.

At the tails of the Eastern and Western Sea Reefs, and a little outside of them, it frequently happens in the N. E. monsoon, that the tides set constantly to the westward; the ebb running about S. W. 1½ and 2 knots on the springs, continues 7 hours, then abating a little in velocity, changes gradually to west; and this is the flood tide, which is weaker, runs a much shorter time than the ebb, and seldom sets more to the northward than W. by N. or W. N. W. On advancing a little farther up the channel, between the Eastern Sea Reef and Sagor Sand, the flood takes a direction more northerly, in the plane of the channel, and the ebb in the opposite line.

These westerly tides or currents, about the tails of the Sea Reefs, combined with faint breezes and frequent calms, retard greatly all those ships from reaching the Eastern Channel, which by adhering to directions given when the western route was followed, have run to leeward into Ballasore Road to look for pilots.

Where to find the pilots in N. E. monsoon.

At *present*, the station of the pilots in the N. E. monsoon, is at the entrance of the Eastern Channel, and they generally anchor on the Eastern Sea Reef at night, or during the flood in the day. At times, a pilot vessel may be found to the eastward of Sagor Sand, or to the westward of the Western Sea Reef, on the look-out for ships that have deviated from the common route; but as several of the pilot snows were captured by French privateers, they seldom ventured so far out as the tails of the Sea Reefs; and unless they were met with, conducting ships out of the river, inward-bound ships had often to work up channel to the Reef Buoy, or a little higher before a pilot could be got; but they will *now* no doubt be found at the tails of the reefs.

Cautions requisite,

From what has been stated, it is advisable for all ships bound to Hoogly River, from the commencement of the N. E. monsoon, to its failure in the early part of March, to endeavour not to get to the westward of the Eastern Sea Reef; but rather to obtain soundings on this reef, or on the tail of Sagor Sand, that their true situation may be known.

A ship coming directly from the southward upon the tail of a sea reef, cannot be certain on which of them she has struck soundings, although her longitude may be known tolerably well by chronometers or observations. She ought, in this case, to keep a good look-out for ships coming out of the river, and if several are seen, or a single large one be standing out to sea, her situation may be known, for in *all probability*, those ships are proceeding out by the Eastern Channel.

to approach Sagor Channel in this monsoon.

To approach this channel from seaward, when the longitude is known near the truth, the most advisable method is to get soundings on the tail of Sagor Sand, or on the Eastern Sea Reef. To effect this, a ship should endeavour to get into lat. 21° 6′ or 7° N., whilst to the eastward of Sagor Sand, and steer west, keeping in 8½ fathoms at low water, or about 9½ or 10 fathoms at high water; she will have soft ground in this parallel until the depth decrease suddenly on the tail of Sagor Sand, over a hard bottom. If near low water, she may edge to the southward a little, and after crossing its southern extremity in 5, 6, or 7 fathoms, haul to the N. Westward into the proper channel. If it is more than half flood, she may cross over Sagor Sand when the latitude does not exceed 21° 10′ or 21° 12′ N., but this sand or reef, being steep on both sides, ought always to be approached with caution, particularly to the northward of the latitude last mentioned.

If in steering to the westward, a ship keep between lat. 21° and 21° 4′ N., she will miss the tail of Sagor Sand, but get upon the Eastern Sea Reef in 5½ or 6 fathoms hard sand, about 8 miles to the westward of the former; it seems, however, preferable, to keep so far up as to get the first hard soundings on Sagor Sand, when the weather is favorable, and the sea smooth, to prevent mistakes; for many ships have thought the soundings they had on it, to be those of the Eastern Sea Reef, when they came upon it from the southward.

When soundings have been obtained on the tail of Sagor Sand, or on the Eastern Sea

Reef, and a ship's true place ascertained to be at the entrance of the Eastern Channel, she may if no pilot vessel is discerned, work up in search of one, to the Reef Buoy, or a little farther, taking her soundings on the edge of the Sea Reef in tacking from the westward, and standing about ½ or ¾ channel over toward Sagor Sand on the eastern tack, agreeably to the directions given in describing *Sagor Channel,** in the preceding section, " Entrance of the River Hoogly."

## *STORMS near and in the RIVER HOOGLY.*

### LACAM'S CHANNEL, CODJEE DEEP: TIDES, AND THE BORE.

EXCLUSIVE OF HARD GALES, which blow at times against the shores, that embrace the head of the bay, between the month of April and the end of August, when the S. W. monsoon prevails with most force; short gales, or storms, are liable to happen at other times. The storms that prevail during the S. W. monsoon, blow sometimes from S. S. E., but more frequently between S. and S. W., veering at times to the westward. Storms from southward in some years, have been experienced late in September, in October, and November, and sometimes, though seldom, in the early part of December.

When storms are most liable to happen at the head of the Bay.

August 1814, a storm happened in the head of the bay, in which several ships were disabled; one of them, was the Eliza, Capt. Roberts, which ship was obliged to put into Coringa to repair her damage.

September 29th 1807, the Company's ships, Ceylon and Walpole met with a severe storm, which commenced at S. E., shifted to N. E., North, N. W., blew a hurricane at West, then moderated at S. W. and S. S. W. The Ceylon, was at anchor in 16 fathoms, in Ballasore Road, when the gale commenced, parted one cable, cut from her best bower anchor, and went to sea, and had a suit of sails blown away. The Walpole was in 46 fathoms water off Point Palmiras, lost her mizen-mast, and sustained other damage in the gale; on the following day, she fell in with the Lady Barlow, country ship, totally dismasted.

October 23d 1810, the Indus, in 18 fathoms water off Point Palmiras, lost her sails, and had a boat washed away by an easterly gale; the wind afterward veered to N. W., and enabled her, and other ships in company to stretch off shore.

Late in September 1812, the Mysore, lost her anchors, and main-mast, and sustained other damage in a storm, at the tails of the Sea Reefs.

Montagu, in 1708, carried from abreast of Achen Head S. E. and E. S. E. winds to lat. 13° N., where, on the 10th November, a dreadful storm blew away her top-masts, were also obliged to cut away the mizen-mast, and with 3 pumps could scarcely keep her free.

N. Westers,

NORTH-WESTERS, are most liable to happen near the entrance, and in the River Hoogly, about the changes of the monsoon, particularly in April and May, also in October, November, and sometimes in December. These, are sudden severe gusts of wind from the N. W. quarter, generally indicated by a dense cloud rising rapidly from the horizon, accompanied at times by lightning. The violence of some of these N. Westers is instantaneous and excessive; I have seen all the ships moored at Calcutta, driven on shore by one of them, in

are at times very severe.

* The Sagor Channel, although *recently* adopted as the best for entering or departing from the River Hoogly, was *formerly* used; the ships Mermaid, Severn, Mary, Samuel, and Jane, proceeded to sea by it 16th December, 1712; and it was much frequented in early times.

May, 1784, and for a short time, it was impossible to walk in the streets. They are, however, seldom so violent, particularly at the entrance of the river, although on the night of the 5th of December, 1803, about eight ships riding there, on the look-out for pilots, lost anchors, during a gale blowing directly out of the river, with lightning and small rain; whilst a heavy sea rolled in from the opposite direction, occasioned by a strong gale in the bay blowing from the southward at the same time, and reaching within 30 leagues of the Sea Reefs.

The channels formed between the sands in the *great* entrance of Hoogly River, have been already described; the *small* entrance, or easternmost passage into the same river, seems also deserving of the navigator's attention.

Lacam's Channel.

LACAM'S CHANNEL, OR CHANNEL CREEK, called by the natives Barratulla, is a small branch of Hoogly River; separating from it in lat. 21° 57′ N. on the north side of Mud Point; it takes an undulating course nearly S. by E., dividing Clive's Island and Sagor Island, on its western side, from the low land of the Sunderbunds to the eastward, then takes a direction on the east side of Sagor Sand to seaward, about S. S. E. ½ E. There are several sands in this channel that project from the different points of land on each side, which might easily be marked with buoys or beacons, the velocity of the tides being much less here than in the great branch of Hoogly River; in such case, the navigation by this channel would not be difficult, for several ships at different times having entered it by mistake, passed through in safety.

Mr. Lacam, commenced a plan in 1770, to construct docks for large ships at an eligible place on the east side of the channel for that purpose, which he called New Harbour; and proposed to build a lighthouse on the point of land that forms the east side of the entrance, which projects several miles farther to seaward than the south end of Sagor Island, and has upon it a *tuft* of high trees. This has in general been called Lighthouse Point, from which a sand projects to the southward and eastward, and a considerable way to the S. E. In the entrance of the channel between it and Sagor Sand, the depths decrease gradually in the east side, on the edge of Lighthouse Sand, but deepen toward Sagor Sand, over a bottom of soft mud in the proper channel.

The smallest depths in the entrance of the channel in the fair track, seem to be from 4 to 4½ fathoms at low water spring tides, about 5 or 6 miles below Lighthouse Point, which continue nearly the same, a considerable way farther to seaward; but from the Charlton's Journal, and other accounts, it is probable that the depths are generally greater than mentioned above.

The Charlton proceeded through it.

The Company's Ship Charlton, arrived in Ballasore Road, in August, 1801, and finding no pilots there, stood to the eastward across the tails of the sea reefs, and unexpectedly got over the tail of Sagor Sand; she then hauled to the N. N. W., and anchored at 6 P. M., 18th August, in 7 fathoms at high water, loose sand, the tops of the trees on Lighthouse Point just visible from the deck, which bore nearly N. N. W., distant about 4 or 4½ leagues. On the following morning, after weighing and steering N. N. W. ½ W. 4 miles, she anchored in 4½ fathoms the least water, with the trees N. by W. ½ W.; the boat sounding to the northward had 3½ fathoms sand, but to the westward, about 2 miles from the ship, the water deepened to 7 and 8 fathoms mud, near Sagor Sand. The ship was moved to this station, in 7 fathoms at low water, from whence the boat went to Lighthouse Point, and never had less than 6 fathoms; she then beat down to the ship against a light southerly wind, shoaling to 3½ fathoms sand in the east side of the channel, and deepening again into 6 and 7 fathoms mud to the westward; by which she was guided, in a rather dark night. At 6 A. M., 20th August, the ship weighed and steered N. W. by N., which is nearly the line of Sagor Sand; within ½ a mile of it, they found the deepest water. There is a small projection in the sand, perceived by the water breaking in that part, which is avoided, by steering a point or two more easterly for a few minutes. After the Charlton got abreast of Lighthouse Point,

she moored in 11 fathoms, secured from the S. W. by a great part of Sagor Sand dry at half tide; the boat was then sent to Sagor Road for a pilot, who carried her through Channel Creek into Hoogly River.

Captain J. Cumberlege, of the Charlon, remarks, that a ship entering this channel from sea may stand boldly on, till the breakers on Sagor Sand are seen, and by keeping them ½ a mile on the larboard hand, the passage will be open. He farther observes, that a light-house, if erected on the point of land, called Lighthouse Point, would be seen night and day, at a distance from danger, and would lead a ship into safety at all times without a pilot. To sail into it with a fair wind.

Many ships in the N. E. monsoon, mistake the soundings on Sagor Sand, for those of the Eastern Sea Reef, and work up Lacam's Channel until the land is seen. Should a ship from stress of weather, or from any other cause adopt this channel, and discern the tuft of trees on Lighthouse Point, bearing N. by W. ½ W. or N. N. W., she ought to steer about N. W. by N., taking the soundings in the west side of the channel, near Sagor Sand, where over a bottom of soft mud, is found the deepest water. When Lighthouse Point is approached within 4 or 5 miles, she may steer a little more to the northward, and pass it about ½ a mile distant in 9 or 10 fathoms, she may then moor and send the boat for a pilot; or she may proceed higher, with the boat a-head sounding, and anchor in 8 or 9 fathoms near the western shore.

From this place, the egress to the sea is more easy, and much shorter than from Sagor Road, as the sand on the east side of the entrance, does not project near so far out as those that bound the other channels to the westward. And from it to sea.

A ship proceeding to sea by Lacam's Channel, being abreast of Lighthouse Point, ought to steer first about S. S. E., and afterward S. E. by S., which will carry her clear out; observing, that the deepest water is in the western side of it, toward Sagor Sand.

CODJEE DEEP,* situated in lat. 21° 27′ N., about 18 miles E. S. E. from the south end of Sagor, and 9 miles in the same direction from Lighthouse Point, distant about 4 or 5 miles from the nearest shore, is a small island scarcely a mile in diameter. To the northward of this little island, there is an excellent road, called ***Hicks's Bason***, which is the best harbour on the coast of Bengal; and the anchorage in it, is from 5, to 6 and 7 fathoms mud. N. N. W. from the island, the entrance of Subtermooky River is situated, and N.N.E. from it that of Jumerah, having 6 and 7 fathoms water near them, at the upper part of the harbour. The best channel leading to it, and to both rivers, is on the west side of Codjee Deep, bounded on the east side by that island, and a flat that projects from it a great way to S. S. Eastward; and on the west side, by the extensive flat which stretches from Lighthouse Point to S. E. and Eastward, separating it from Lacam's Channel. This channel leading to the harbour, by some called ***Howe's Channel***, is at Codjee Deep about 2 miles wide, with 10 fathoms in it nearly close to the island; to seaward, the depths decrease gradually to 4 and 3½ fathoms, which is the least at low water. To the N. Westward of the island, upon the flat that bounds the west side of the channel, there is a sand dry at low water, and at other times of the tide the sea breaks over it, in strong southerly gales. A little farther to the N. N. W., at the entrance of Subtermooky River, is King's Island, under which ships may anchor in 6 or 7 fathoms, at the N. W. angle of the harbour, sheltered from all winds. The great flat and sands on the west side, secure it from the sea in that direction, and the Island and Bulcherry flats, break off the sea to southward and eastward. Codjee Deep, and the adjoining harbour.

To sail into the harbour, a ship should bring the Island Codjee Deep to bear north a little easterly, then steer directly in, clear of the west side of the island, which is steep to, and the channel about 2 miles wide; from hence, she may if blowing strong at S. W., steer about N. by W. to the anchorage under King's Island. How to enter it.

* Deep, or Diva, an Island.

As the navigation into the River Hoogly by Lacam's Channel, *may probably* in some future time be adopted, or become more frequented than at present, it was thought prudent to give some directions concerning it and the harbour under Codjee Deep; for in such case, the latter would be found of great importance, as a place of shelter for ships in distress. When at the entrance of Lacam's Channel, with a W. S. W., or Westerly gale, if a ship were unable to steer N. W. by N. into that channel, or ride at her anchors, the same wind would be favorable for crossing the southern part of Lighthouse Flat, into Howe's Channel, and run up that channel past Codjee Deep, into the harbour.

Affords shelter to ships in distress.

At present, two essential guides are wanting to facilitate the approach to the River Hoogly, and give confidence to navigators; these are two *distinguishing marks*, one on the Eastern Sea Reef, the other on Sagor Sand, placed a little to the southward of the outer limit of danger. One of these ought to be a floating light, the other a floating beacon, or spire buoy of great elevation; the former should be placed on the Eastern Sea Reef, so long as the Sagor Channel continues in general use; but on Sagor Sand, if ever Lacam's Channel is adopted. The utility of such conspicuous *sea marks* is obvious, for so soon as a ship in either monsoon approached the tail of the Eastern Sea Reef, or of Sagor Sand, one of them would be discerned, pointing out to the navigator his *true* situation, which would enable him to proceed with confidence into the proper channel.

Leading marks wanting at the entrance of Hoogly River.

Strong tides in that river.

THE TIDES, in Channel Creek are not strong, but in the River Hoogly they run with great rapidity on the springs, sometimes above 7 miles an hour between Sagor and Calcutta, but not so strong in the channels outside. They flow highest during the S. W. monsoon, the rivers being swelled by the rain which falls in the interior, and an accumulation of water impelled against the shores by the strong southerly winds, adds to the rise of the tides in this season; whereas, the northerly winds blowing from the land in the N. E. monsoon, facilitate the progress of the water from the rivers; for then, the quantity of water is less, with a smaller rise and fall of tide, than in the S. W. monsoon.

This is also the case on the south coast of China, and on all the coasts of India to the northward of the equator, which are open to the South or S. Westward.

Require care by those in boats during the night.

Persons unacquainted, should be careful when passing between Calcutta and the lower parts of the river in boats *during the night*, for many lives have been lost through the apathy and neglect of the country boatmen, in running foul of vessels anchored in the stream, when by the rapidity of the tides, the boats were immediately overset, or broken in pieces. To avoid an accident of this kind, it is prudent in proceeding upward with the flood, to keep near one of the sides of the river, out of the track of ships or large vessels which happen to be at anchor.

At Calcutta, it is high water about 3 hours on full and change of moon, the difference of time between it and the tail of the Eastern Sea Reef that makes high water, being $5\frac{3}{4}$ hours; so that it is nearly high water at the former place, when it is low water at the Sea Reefs.

Description of the Bore.

THE BORE, in the River Hoogly, is occasioned by the rain in the country imparting greater velocity and duration than usual to the tide of ebb, to overcome which, an excessive effort is made by the first of the flood, producing that sudden and abrupt influx called the Bore. It is seldom perceptible in the N. E. monsoon, except when the tides are higher than usual; but about the equinoctial tides in March, it is at times high and dangerous. From May to October, when the river is greatly elevated, the Bore frequently prevails for several days at the height of the springs; it is first discernible on the Diamond Sand, below Diamond Harbour, and becomes more conspicuous on the sands at Hoogly Point, a few leagues farther up, where it meets with great resistance by the sudden bending of the river to the westward: from thence, it runs high over all the principal sands as far as Hoogly town, distant near 70 miles, employing hardly 4 hours to travel this distance, and its general

velocity is nearly 20 miles in the hour. On the sands contiguous to the banks of the river, the Bore rises in a large wave, sometimes 12 or 15 feet perpendicular, and rolling along with great noise as the harbinger of the flood tide, carries every floating body along with it, and will overset any boat or small vessel that may happen to be on the sands, or in shoal water near them. It is seen in the day, at a great distance, and the roaring noise indicates its approach in the night, when all boats in shoal water quickly pull farther out into deep water for safety, because there, the waves do not break, the water being only agitated greatly with a confused swell. Very dangerous to boats in shoal water

At Calcutta, the shore is steep, with deep water near it; here, the boats do not all leave the shore when the Bore is approaching, but the people stretch a rope upon the land and haul them as far in as possible, when they are lifted up by the great swell of water occasioned by the Bore, which I have seen at times rise instantaneously to the high water mark* of neap tides.

Europeans, should be cautious in the night, if they are upon the river, or crossing it in boats near low water spring tides, when the Bore is liable to happen; they ought to keep in deep water, for if it approach when they are aground on any of the sands, or in shoal water near them, they will be in the greatest danger of perishing. Mr. Thomas, of the Fox, proceeding in a burr from Calcutta to Kedgree, with the Commander's baggage, was drowned by the carelessness of the people getting the burr into shoal water, when the Bore overset her, and every thing was lost. Captain Haig, of the Company's Ship Woodcot, perished by the Bore late in the evening, in the act of leaving the shore opposite to Calcutta in a boat, to cross over to that town; and many other persons, have suffered in open boats, during the night, by this destructive phenomenon. Instances of this.

## *COAST of BENGAL from CODJEE DEEP, to CHITTAGONG.*

### AND THE INTERJACENT RIVERS.

THE COAST OF BENGAL, from Hoogly River to the principal mouth of the Ganges, is all very low, without any distinguishing marks; and the country is a level woody plain, generally called the Sunderbunds, from a kind of timber very plentiful here, called Sundry. This low country, or ***Delta of the Ganges***, is intersected in various directions, by numerous small branches of that great river, and other rivers, many of which communicate together by lateral branches, and most of them disembogue by wide channels into the sea. Coast of Bengal is very low.

ROYMATLA, OR MUTWALL RIVER, about 30 miles to the eastward of Sagor, separated from Jumerah River and the Island Codjee Deep, by Bulcherry Island and flats, is above a league wide at the entrance, the channel stretching N. by W. and S. by E. About 10 miles from the land, the depth is 3 fathoms at low water, with a gradual increase to 9 or 10 fathoms at the entrance; and the southern extremity of the land that bounds it Mutwall River.

* When the Bore impels the sudden swell of the water upon the land, and having reached its utmost impetus, the swell rushes backward with great violence, nearly to low water mark. A ship of 300 tons burthen, was hauled on shore at Calcutta in September, 1785, to have her bottom cleaned; although the ground was dry around her to a considerable distance at low water, when the Bore came the swell nearly floated her, and in its violent reflux threw her on the opposite side, by which several of the floor timbers were broken.

on the east side is in lat. 21° 29′ N., having a very shoal bank extending from it a great way to seaward.

This river, branches out into several ramifications at different distances from the sea, the westernmost of these (called Bogybogie, for a considerable way,) extends to the salt lake near Calcutta, having never less water in it than 3 fathoms; so that a ship of considerable burthen might enter Mutwall River, and with the assistance of a boat a-head to sound, she could proceed to Taida, a village close to the salt lake.

Bulcherry Island, on the west side of the entrance, is large, separated from the other land only by a narrow creek.

Bangadoony River.

BANGADOONY RIVER, the next to the eastward of Mutwall, and about 3 leagues from it, is small, with tolerable deep water at its mouth, and the course of the channel to seaward is about S. S. E. It takes this name from an island which separates the entrance from Gua-Suba River, the next in succession to the eastward. A vessel of considerable burthen might pass to the northward of Bangadoony Island, and moor between it and a small island in the passage, sheltered from all winds.

Gua-Suba River.

GUA-SUBA RIVER, is of considerable size, but the most difficult to enter of any on the coast, on account of the bending channel at its mouth. A vessel to enter it, must bring the middle of the land on the east side of the river to bear north, and steer directly in for it until near the shore; she ought then to steer to the westward until close to Bangadoony Island, from whence the channel takes a direction right up the river.

Roymongul and other Rivers.

ROYMONGUL ENTRANCE, about 3 leagues to the eastward of Gua-Suba River, and 18 leagues from Sagor Island, receives (about 2 leagues from the sea) the united streams of 3 rivers, Harribanga the westernmost, Roymongul the next, and Jubunah the easternmost. The point of land on the west side of the entrance, is in lat. 21° 37′ N., with 8 and 10 fathoms in the channel close to it, and 12 fathoms inside toward Harribanga River; from the point to seaward, the depths decrease gradually to 4 fathoms in this western channel, which lies nearly north and south, and the outer part of it is separated from that of Gua-Suba by the extremity of the sand that stretches out from the land between them. The eastern channel leads directly to the entrance of Roymongul and Jubunah Rivers, having a sand between it and the western channel; it is a large channel with deep water inside, stretching nearly about S. by E. to seaward, the depths decreasing gradually to 4 fathoms in that direction; and this is one of the most considerable openings on the coast, and forms a good harbour. It is high water in the entrance of Roymongul River at 11 hours 30 minutes on full and change of the moon.

Mollinchew, and Burrapunga rivers.

MOLLINCHEW RIVER, about 2 or 3 leagues eastward from Roymongul entrance, has a channel stretching in a S. S. Westerly direction to seaward, with 7 or 8 fathoms near the land, decreasing to 3½ or 4 fathoms. A few miles farther to the eastward is BURRAPUNGAH RIVER, having a narrow channel, and is separated from the former by Putnay Island, which projects between them to seaward.

From this island, an extensive reef and flat stretches out 3½ or 4 leagues; on which the ship Falmouth was lost in 1766.

Directly south from Roymongul and Mollinchew Rivers, the swatch of no ground is situated, already described under the head of "Directions to Approach the River Hoogly."

Murjattah river.

MURJATTAH RIVER, situated 2½ or 3 leagues to the eastward of Putnay Island, and 24 leagues from Sagor, is wide at the entrance, the channel stretching from the land on the east side nearly S. by W., shoaling gradually from the land to 3 or 3½ fathoms outside.

About 4 or 5 miles inside the entrance of the river, 2 islands called the Paravangah Islands are situated, and on the southernmost, there is said to be a tank of fresh water. On the reefs bounding the channel leading to this river, in lat. about 21° 34′ N., the Berkshire was lost, in 1771.

BANGARAH RIVER, about 3½ leagues E. N. Eastward from the former, and much smaller, has a channel stretching about south from the point of land on the west side, with depths from 5 and 6 fathoms, decreasing outside to 3½ or 3 fathoms. About half-way between this river and that of Murjattah, another small river falls into the sea, and is only a branch of the former, which all communicate with each other. Bangarah river.

HOORINGOTTAH RIVER, situated about 5 leagues to the N. Eastward of Bangarah River, and 33 leagues to the eastward of Sagor Island, has a very spacious entrance, about 3 leagues wide, between the 2 great banks or shoals which form it. These project from the land on each side of the river about 5 leagues to seaward, or to lat. 21° 33′ N., having 3 or 3¼ fathoms hard ground in this latitude on their extremities, and shoaling gradually to 2 and 1½ fathoms farther in, toward the land. The westernmost of these, called Argo Flat, has 3½ fathoms on its extremity in lat. 21° 32′ N. lon. 90° 0′ E., and the western or Great Channel, leading into the river is on the east side of this flat, in a S. by E. line from Tiger Point, which point bounds the west side of the river's entrance. Hooringottah River.

The depths in the entrance of the channel in lat. 21° 33′ to 21° 35′ N. are nearly the same as on the tails of the sands, from 3 to 3½ fathoms at low water, and in some places rather hard bottom, but after getting a little farther in, the depths gradually increase over a soft bottom to 5, 6, 7, and to 8 and 9 fathoms abreast of Tiger Point.

About 5 or 6 miles inside of the tails of the reefs, lies the south end of an extensive sand called Heroine Reef, which extends northward into the river, separating the channel into 2 branches, but the easternmost is narrow and shoal, and bears due south from the point of land that forms the east side of the river, called Landfall Point. When within 7 miles of Tiger Point, there commences a Middle Ground, by which a Middle Channel is formed between it and the Heroine Reef, with from 3 to 3½ fathoms water in it, but it is narrow; the Great Channel on the west side of the Middle Ground, being the only safe passage for large ships.

Unless the longitude, or the relative distance from Sagor Island is correctly known, it might be difficult to find the entrance of Hooringottah River, as the land will not be discerned, till a ship has entered into the channel a considerable way between the sands. But if a ship happen to sound in the swatch of no ground, it will be a tolerable guide to direct her to the entrance of that river, observing, that from the N. E. angle of the swatch, the southern extreme or tail of Argo Flat bears E. N. E. distant about 7 leagues. When this flat is approached, and a ship certain of her position, she ought to steer about N. by E. or North along its eastern side, or in working up with the flood tide, she may make short tacks from it to the eastward, till Tiger Point is seen, then keep it bearing N. by W. which will lead her up in mid-channel, or keep it between N. ¾ W. and N. by W. ¼ W. with a turning wind.

It must be observed, that Landfall Point on the east side of the river, being 6 miles farther south than Tiger Point, will be seen before it; and probably also the land on the western shore, which stretches about S. W. by S. from Tiger Point, and afterward W. S. W. toward Bangarah River; but Tiger Point is the eastern extremity of the land that forms the west side of the river, by which it will be easily known. A ship may pass this point within ½ a mile, also Buffalo Point about 1½ mile N. by W. from it, she may pass at the same distance: about 5 miles farther to the N. N. W. lies Puncah Point, the south extreme of Puncah River, which may be passed at 2 miles distance, and when it bears west, haul over

to Deer Point on the eastern shore, as Puncah Shoal occupies all the space fronting the river of the same name within ½ a mile of the eastern shore. Having crossed over to Deer Point, a ship must then keep close to the eastern shore, in proceeding up to Nash Harbour, at the entrance of Bomany Creek, which is in lat. 22° 11′ N., about 3 leagues to the northward of Deer Point. Betwixt these places, Mack Shoal occupies the middle of the river, having a channel on each side of it close to either shore, but that close to the eastern side of the river is preferable, being wider than the other, and having from 10 to 6 fathoms water.*

At the entrance of Hooringottah river, it is high water about 12 hours on full and change of the moon, and the tide runs very strong on the springs.

The rivers which disembogue into the Hooringottah, pass through a part of the country abounding in rice, which is here, purchased on very moderate terms: ships, therefore, have sometimes proceeded to this place, and loaded with grain for the Coromandel coast, when the prices were high at Calcutta. The Cartier, and other ships which loaded in Hooringottah river, were from four to five hundred tons burthen. A ship being about to enter it, or any of the rivers along this coast, ought to keep a boat sounding, to trace out before her, the soft bottom in the proper channels, as they are imperfectly known, little frequented, *and liable to alter*, by the freshes running out against strong winds and a heavy sea during the S. W. monsoon.

Caution proper.

Captain J. Ritchie was sent to survey the coast and rivers between Sagor and Chittagong, on account of a ship having been driven on it by a southerly storm, and judiciously observes nearly as follows.

General remark relative to the coast, channels, and rivers.

Every navigator proceeding to this coast, or being driven towards it by accident, *ought to remember*, that the whole of it when first seen from a ship at sea, has the appearance of a range of low islands covered with trees, and that the ground between the ship and them is a sloping bank, with very little water on it, near the land. That the bank is cut through by a channel between each island, that these channels are variously situated, having each a different course, but that all have a soft bottom, with an increasing depth of water toward the land. When the coast can be seen from the deck, the depth of water is in general about 3 fathoms at low water, and very few places have much more or less; the bottom at this distance is mostly stiff ground. If a ship be in a channel, as she draws nearer the land the ground will become very soft, with an increase of depth; if not in one, the ground will suddenly become very hard, and the depth decrease; and should this be the case, she ought immediately to haul to the eastward or westward as the wind may permit, until the ground become soft; and there is no doubt, that the depth will increase at the same time. Whenever the ground is found to be quite soft, a ship may steer for the opening without fear; as she enters it, what appeared to be an opening between islands, will be found in reality the entrance of a river.

The coast not being inhabited, it is from the salt-works interspersed along it in some places, that those who have the misfortune to be driven upon this coast in tempestuous weather, may expect relief, either of boats, or of men, to pilot them to the inhabited country. The people employed on this business have the general name of Mollingaho, and are a quiet, harmless race of men. A small supply of fresh water, and a little rice may be got from them, which is their principal food, the few fowls they have being sacrificed to Gaugie Sahib, (the god of the woods) for protecting them from tigers, or other wild beasts. Many of these fowls stray from the Salt Churrs, become wild, and sometimes fly over the rivers; hence the crowing of cocks in the woods is often heard, which should be no inducement for persons unacquainted to go into the woods in search of people; they ought also to beware of going ashore at the Salt Churrs in the night, for both the royal tiger and leopard are on the watch

*These directions for the Hooringottah River, are taken from an excellent survey of that river made by Capt. Malcolm M'Kenzie, during his voyages there, and obligingly communicated to me by that navigator.

there, and often cover all the ground over at night, as may be seen by the prints of their feet.

RABNABAD ISLAND, the southern extremity, is in lat. about 21° 50′ N., and 6 or 7 leagues to the eastward of Hooringottah entrance; this island is large, with a channel on each side; the westernmost, extending from the west side of the island about S. S. W., is narrow, but thought to have 3 or 3½ fathoms water. The other, on the east side, is supposed to contain nearly the same depths, but shoal water extends a great way to seaward.* Rabnabad,

To the N. E. and Eastward of Rabnabad, is situated a group of islands, called Donmanic Islands; and to the northward of these, the *principal* mouth of the GANGES disembogues into the sea, by several channels. Between the mouth of this river, and the Coast of Chittagong, the gulf is very shoal, and imperfectly known. The northern part of it is occupied by the large island Decan Shabazpour, which separates the mouth of the GREAT RIVER MEGNA from that of the Ganges; but to the northward of it, these rivers communicate, and form several smaller islands. Betwixt Decan Shabazpour and Hattia, the next island to the eastward, there are other smaller islands, the southernmost of which fronting the sea called Moncoorah is the largest. In the N. E. part of the gulf, to the eastward of Hattia, the islands Bominy and Sun-Deep are situated, near the main land; these are large, particularly the latter, which is the outermost. The River Megna, disembogues into the sea by various channels between these islands, some of them imperfectly known. and other islands.

SUN-DEEP, extends from lat. 22° 20′ N. about 6½ leagues to the northward; it is a fertile island abounding with cattle, but free from tigers and other wild beasts, which infest the neighbouring continent. From the south end of the island, a shoal projects about 2 leagues to seaward, having a channel with 3½, 4, and 5 fathoms water along its western edge, leading to the principal town on the west side of the island, situated about a mile from the shore, known by a remarkable tree near it, and a grove of palm trees. To the southward of the town, there is a creek having 4 fathoms in it at low water, which is a safe harbour, but difficult to enter with the flood, as a ship may be set on the north point of the entrance, the direction of the creek being to the S. Eastward. The best time to enter it, is with the latter end of the ebb, and the first of the flood will set a vessel directly in. Sun Deep.

The channel on the east side of Sun Deep, between it and the main, leads to Bominy Harbour, and is 5 or 6 miles wide in the southern part, with depths from 5 to 7 fathoms. Ships bound to that harbour, after bringing the north end of Sun Deep to bear West, must haul within a mile of the main, and steer along it at that distance, keeping in 7 and 8 fathoms until they open the east point of Fenny River; they must then haul over to the westward for Bominy Island, where in 5 fathoms at low water, they will be sheltered from all winds. To proceed to Bominy Harbour.

It is high water in Bominy Harbour, at 2½ hours on full and change of the moon.

The whole space between the meridians of Rabnabad Island and the east end of Sun Deep, has not been particularly examined to the northward of lat. 21° 30′ N., it would, therefore, be imprudent, for ships to exceed much that parallel between these meridians; for there, the water is generally shoal, and in about lat. 22° N., there is said to be two banks on which the sea breaks in blowing weather, one of them 5½, the other 9 leagues from the Coast of Chittagong. On this account, a ship departing from the River or Road of Chittagong, ought to steer to the southward nearly to lat. 21° 30′ N., before she hauls much to the westward, across the head of the bay. The N. Eastern angle of the bay not well explored.

In lat. 21° 30′ N., almost the whole breadth of the head of the bay, it is high water at

* The Dove, Capt. Duffin, was lost about 12 or 14 years ago on the sands, which project out from this part of the coast.

11 hours on full and change of the moon; the difference in time for every 20 miles of latitude, is 1 hour in the open sea, and the general direction of the flood is to the northward; by attending to this, the time of tide may be always known when in soundings.

## *MONSOONS and CURRENTS in the BAY of BENGAL.*

General remark.

SOUTH-WEST MONSOON, together with the general winds, have been briefly stated in a former section, entitled "Directions for the Outer Passage, to places on either side the Bay of Bengal," and in the section of "Directions to approach the River Hoogly, &c." a farther description of winds and currents adjacent to the northern shores have been given; yet, a more particular description of the prevailing winds and currents throughout this great bay or gulf, may be of utility, as it is more frequented by navigators, than any other part of the Indian Seas.

Winds in the Bay of Bengal in February.

The winds on the Coast of Coromandel, begin in February to draw to East, and S. Eastward; the N. E. monsoon then becoming faint, land and sea breezes often happen, particularly in the latter part of the month, and early in March, gentle breezes between N. W. and West, blow frequently from the land after midnight until morning, which are generally followed by calms or faint variable airs, until the S. Easterly breeze comes from the sea about noon. These land and sea breezes, do not always happen in February, for Easterly and N. E. winds are those that prevail most, sometimes until March, but they are generally interrupted by southerly breezes, or other changes. About the middle, or latter part of February, brisk winds between S. E. and S. W. happen at times, at a considerable distance from the coast, by which some ships have made a passage from Tranquebar or Madras to Bengal in 7 or 8 days. In the middle, and eastern parts of the bay, the N. E. monsoon prevails in this month, generally with settled weather, and a clear sky, and it is considered throughout the bay, to be the finest month in the year.

In March.

The S. W. monsoon, may be said to commence in March upon the Coromandel Coast, for the breezes from the sea in the afternoon, draw then well to the S. Eastward, and the land breezes frequently to S. Westward. N. E. and Easterly winds, also happen in this month along the coast, but those between E. S. E. and S. W. generally prevail; the same winds are frequently experienced well out from the land, often light and variable. In the middle, and along the east side of the bay, light northerly winds between N. E. and N. W. are mostly experienced during this month, and at times, considerable breezes from S. W. and Southward; very faint airs and calms are also liable to happen in March, which is generally a pleasant month, with fair weather in most parts of the bay.

In April.

In April, the sea breezes on the Coromandel Coast commence from S. S. Eastward about noon, or earlier, and continue until 9 or 10 P. M.; or at times, during the night. After midnight, the wind frequently veers to S. S. W. and S. W., but seldom blows directly from the land until May, when the land and sea breezes, both become more open and regular.

These winds prevailing in April between S. S. E. and S. S. W. or S. W., with a strong current to the N. Eastward, make it almost impossible for ships to work along the coast to the southward, particularly if they are indifferent sailers. About the Nicobar Islands, and near the east side of the bay, light easterly winds are generally experienced all the month of April, often veering to the N. E. and N. Westward, with intervening faint variable breezes and calms. In the middle of the bay, the prevailing winds in this month are variable, mostly from the southward.

In May, the winds on the Coromandel Coast, prevail mostly between E. S. E. and S. W.; the breeze generally sets in about noon from seaward, blowing strong from S. Eastward until the evening, and sometimes till midnight; afterward, it veers to South, and S. W., where it continues during the morning. Calms or faint airs often intervene between the land and sea breezes, at other times the wind veers from the one to the other without abating much of its strength. Sharp squalls from N. W. sometimes blow off the land in May, accompanied at times by showers, with lightning and thunder. In May.

Late in April, or early in May, the S. W. monsoon becomes general about the Nicobar Islands and in the eastern side of the bay, where it is much later than in any other part.

A STORM is liable to happen on the Coromandel Coast in April, or even in May; but fortunately many years pass over without a storm in either of these months, for they blow with great fury. They are generally preceded by a heavy swell rolling in upon the shore, and commence at N. N. W. or N. N. E., veering to N. E. and East, where they blow hardest, with much rain and a high sea; and afterward abate, when the wind veers to E. S. Eastward. They sometimes do not end in this quarter, but blow with great violence from Eastward, shifting suddenly to S. E. or S. and with great fury ending at S. W.; when this happens (which is seldom) these tempests are exceedingly severe. In April or May, a storm may happen.

His Majesty's ships Namur, Pembroke, and Apollo, hospital-ship, were lost at Fort St. David's in April, 1749, during one of these violent storms. On the night of the 19th May, 1787, a severe tempest extended along great part of the coast, very destructive to the shipping and to the country. At Coringo and Jaggernautporam the sea rose much above its natural level, and with an overwhelming wave, inundated the low country, destroyed the vegetation, many of the villages, thousands of the natives, and numerous herds of cattle. This was considered a singular case, for a tempest seldom happens in May, or even in April, although the latter is reckoned a precarious month on the coast. Mostly all the gales on this coast commence at N. N. W., or from the northward; ships, should, therefore, proceed to sea with these winds when a storm is apprehended, to get an offing before the wind shifts to the eastward, where it generally blows with the greatest violence from the sea.

It has been already mentioned, that on the 4th of May, 1811, a storm did great damage at Madras.

In June, July, and August, the S. W. monsoon blows strong throughout the bay, with cloudy weather, and much rain at times; the winds veer to the West, and N. W., frequently blowing in squalls for several hours together, particularly in the north part of the bay. On the Coromandel Coast, strong land and sea breezes are frequently experienced in these months; the latter after noon, generally commences at S. Eastward, veering to the southward in the evening, and continues from that direction great part of the night. In the morning the wind veers to S. W., and sometimes to West, then becoming a strong breeze from the land: these land and sea breezes, are not always regular, for the land winds in June and July, at times, blow strong for one or two days together, veering only to the southward in the afternoon; at other times, the S. Easterly breezes predominate. Winds in June, July, & August.

The weather is generally favorable on the Coast of Coromandel in these months, but it is the stormy season in the northern, and eastern parts of the bay; for there, the S. W. winds blow strong toward the land, with much rain. June is considered a very dangerous month on the Coasts of Bengal and Aracan, for severe storms are liable to happen in that month about the full or change of the moon. Many ships after leaving the River Hoogly in June, and others that have arrived in its vicinity, have foundered with their crews at different times; for few years pass over without a storm happening in that month, in the northern part of the bay. Storms liable to happen in June, in the north part of the bay.

In September, the S. W. monsoon is generally moderate all over the bay, with W. N. W. or N. W. winds at times:—the prevailing winds in this month, on the Coromandel Coast Winds in September.

are southerly, the sea breezes from S. Eastward, and those from the land very variable between S. W. and N. W.; the winds are generally moderate in this month, with settled weather, although, toward the latter end of the month, a gale has sometimes been known to happen near the entrance of the River Hoogly.

Prevailing currents in the S. W. monsoon.

THE CURRENT, on the Coromandel Coast, generally begins to run to the northward about the beginning of February, or by the middle of this month, with the first of the southerly winds; but strongest in April and May, when the wind blows most steady from southward. After May, the northerly current gradually abates in strength, continuing to set along the coast generally until the middle of October, although at times, there is very little current during that period, and it may be sometimes experienced to set to the southward.

In the middle of the bay, the current in March and April is mutable, and seldom strong; between the Coromandel Coast and Nicobar Islands, and about the entrance of Malacca Strait, it sets then, often to the S. Westward; in the northern part of the bay, it sets mostly to the southward in March, but more frequently to the northward in April.

From April, the current set generally to the North or N. Eastward all over the bay in the open sea, until the early part, or middle of October; during this period, it is not always constant, but governed in its direction and strength by the prevailing winds; on the eastern side of the bay, and about the entrance of Malacca Strait, more particularly, it sometimes sets to the southward. When the S. W. monsoon blows with more strength than usual, in the middle and northern part of the bay, the velocity of the current is greatly augmented to the N. Eastward.

The setting in of the N. E. monsoon,

NORTH-EAST MONSOON, on the Coromandel Coast, generally commences in October, mostly between the middle of that month and the 1st of November. Although October is considered a very dangerous month on that coast, the winds continue often light and variable with fine weather, until near the end of the month; but more frequently, about the middle of the month, the weather becomes gloomy and threatening, prior to the setting in of the N. E. monsoon.

liable to storms.

This monsoon is liable to commence with a severe storm, which generally begins at N. N. W., or from the northward, and veers afterward to N. E. and Eastward; sometimes it begins at N. Eastward, and in the middle or eastern parts of the bay, at times from S. W. or Westward.

These storms, are very liable to happen between *the 10th of October* and *the 10th of* December, a period in which the shipping at anchor on the Coromandel Coast, have sometimes suffered greatly, for the wind blows with great violence toward the shore from the eastward, in these storms; and on the coast of Aracan, equally strong upon the land from the westward.

In some years, a storm has been experienced so late as January, but these are generally partial, confined to the vicinity of the southern part of the Coromandel Coast, and the N. E. part of Ceylon.

In the northern part of the bay, the N. E. monsoon begins early in October, in some years; in others, not until the end of that month, or early in November; but in the southern part of it, between the Coromandel Coast and Nicobar Islands, westerly winds frequently prevail more than any other, in both of these months. These winds, are sometimes light and variable, between N. W. and S. W.; when they become brisk, and veer to S. W. or S. S. W., they often reach far to the northward into the bay.

Prevailing winds,

In November and December, on the Coromandel Coast, the wind blows mostly from N. N. Eastward, sometimes accompanied with showers of rain; in the morning, it veers at times to N. N. Westward, inclining a little from the land, and in the afternoon a little from

seaward; but it frequently blows steady along shore for several days together, without any variation, with a considerable swell, and a great surf rolling upon the shore.

From the middle or latter part of November until March, the prevailing winds out in the open sea, are generally between N. N. E. and E. N. E, throughout the bay, accompanied with clear settled weather; but short intervals of variable winds, from S. E., South, or S. Westward, are sometimes experienced in the months when the N. E. monsoon predominates. On the eastern shores of the bay, there are land and sea breezes in this season, and the coast of Aracan is subject to frequent calms or faint airs, and N. Westerly winds. Between the Andaman Islands and Junkseylon, southerly winds and cloudy weather with rain, is at times experienced in December and January. during the N. E. monsoon;

In January, the weather is in general favorable, with steady N. Easterly winds in most parts of the bay; on the Coromandel Coast, they draw to the E. N. E. in this month, during the day, and blow along the shore to southward, or incline a little from the land in the mornings; but sometimes in January, as well as in December, the N. E. winds continue for 3 or 4 days together, without much variation in direction or force.

In February, the N. E. monsoon ends on the Coromandel Coast, the weather is then favorable, and southerly winds commence about the latter part of this month, or early in March.

THE CURRENT, begins to set along the Coast of Coromandel, to the southward, in October, sometimes about the middle of the month. Near the end of this month, or early in November, the current begins to run very strong to the southward; in November and December, it runs frequently in soundings near the land, from 2 to 2½ miles an hour. and current in that season.

At the distance of 2° or 3° from the coast, and in the middle of the bay, when N. Easterly winds begin to blow strong after the middle of October or in November, the current generally runs with the wind to the S. Westward, but unless the N. E. wind prevails with force, the current is frequently very changeable; for in these months, it sets sometimes to the southward, at other times to S. W. and N. Westward.

In January, the southerly current abates on the coast of Coromandel and Orixa, for in the latter part of this month, and in February, there is seldom much current near the land, nor in the middle of the bay; and in these months, it frequently sets to the N. W. or Northward, when the distance from the coast is considerable.

About the Nicobar Islands, and betwixt them and Junkseylon, the current in the N. E. monsoon often sets strong to the N. W., and sometimes to the Northward; on the coast of Aracan, it sets in general to the southward, but at times to the northward; although close to the shores of this coast, and of all those bounding the east side of the bay, there is generally a kind of regular tides, when the weather is settled in the N. E. monsoon.

The period of the currents, or monsoons, changing in the Bay of Bengal, is not always the same; for here, as in most places of the Indian Seas, these changes happen in some years, nearly a month sooner or later than in others.

## *DIRECTIONS to SAIL from the SOUTHERN PARTS of the BAY, toward BENGAL; in both MONSOONS.*

TO SAIL from the Coromandel Coast, or other southern parts of the Bay toward Bengal, the most favorable time to make a speedy passage, is from the end of February or 1st of March to the middle of September, when the S. W. monsoon is prevailing.

To sail toward Bengal in February and March, from Ceylon.

Ships bound from the Malabar Coast, or southern part of Ceylon to Bengal, late in February or in March, should work along the east side of that island to Aganis or the Friar's Hood, if the winds are moderate, and the current not unfavorable; then proceed on a direct course as the winds may permit, for the coast of Orixa about the High Land of Pondy. After reaching the S. E. part of Ceylon about the Basses, should strong N. E. winds and southerly currents be experienced, rendering it difficult to make any progress to the northward, it may be prudent to prevent loss of time, to stand off to the eastward close upon a wind; and when 1° or 2° from the land, it *most probably* will become variable at N. W., West, or S. Westward, or sometimes at S. Eastward, favorable for proceeding to the northward; but it is advisable, not to stand far to the eastward into the middle of the Bay, where the winds are generally from the northward in March, with a current often setting to the southward.

From the Coromandel Coast,

Departing from the Coromandel Coast late in February or in March, it is prudent to keep at a considerable distance from the land, to benefit by variable winds, which may be sometimes expected from the southward; whereas, near the coast, Easterly or N. Easterly sea breezes and faint airs are frequently experienced, making it tedious to get to the northward.

When an offing is obtained, according as the winds will permit, a course should be followed to make the coast of Orixa about Pondy or Ganjam, where the land is high and bold; if a ship do not make it here, she ought certainly to endeavuor to get a sight of the Jaggernaut or Black Pagodas.

and from Malacca Strait.

Ships leaving Achen or Malacca Strait at the period mentioned above, should proceed on either side of the Nicobar Islands into the bay, as may be most convenient with the prevailing winds, then steer for the coast of Orixa as directed.

To sail toward it in the S. W. monsoon.

From the beginning of April to the middle of September, the S. W. monsoon generally prevails along the western side of the Bay; during this period, ships bound to Bengal from Ceylon or the Coromandel Coast, ought to keep within a moderate distance of the land, as the wind sometimes inclines from the westward.

They should also observe, not to approach it very close until to the northward of Vizagapatam, by which will be avoided the curvatures and large bays, and the S. Easterly sea breezes that blow into them frequently with considerable strength. As the currents are liable to run strong to the N. Eastward when the S. Westerly wind is strong, it will be proper, when observations are not obtained, and the distance of the land not exactly known, to haul in for the coast, and make it in lat. 18½° or 19° N., then follow the directions already given for approaching the River Hoogly, during the S. W. monsoon.

Ships bound to Bengal, from Achen or Malacca Strait, in the S. W. monsoon, may come out by the Surat Passage, or rather between Pulo Brasse and Pulo Rondo, whereby they will be enabled to pass to the southward of the Nicobar Islands, or they may keep close along the east side of these, and pass between them and the Little Andaman; or should a ship steer to the eastward of all the islands, and proceed through the Cocos Channel to the northward of the Great Andaman, she will *generally* be able to make the coast of Orixa about Point Palmiras, without tacking, unless the winds hang to S. W., and W. S. W., with a N. Easterly current, which sometimes happens in the strength of the monsoon; and this makes the passage to the westward of the islands preferable, when that route can be followed with conveniency.

To sail toward Bengal in September

SHIPS leaving Ceylon or the Coromandel Coast for Bengal, late in September, should stand well out from the land; if the S. W. winds are found steady, a direct course may be steered for Point Palmiras. If the S. W. monsoon appear to be expended, and the winds incline from the northward or N. Eastward, every advantage ought to be taken to get over on the east side of the bay, by attending to the shifts of wind; and when within one or two

degrees of the Andaman Islands or Cape Negrais, it will be prudent to make all the northing possible with the N. Easterly winds, and endeavour to fall in with the entrance of Sagor Channel. Departing from Madras or other southern ports on the Coromandel Coast, in the early part of the N. E. monsoon, ships are liable, when the winds are light at times from eastward, to be drifted along that coast and the east side of Ceylon by strong southerly currents, before an offing can be obtained; here, they frequently meet with N. W. winds, favorable for running over in the eastern part of the bay.

And in the N. E. monsoon, from Ceylon or the Coromandel Coast.

In proceeding to the northward, it is advisable to work in the open sea, and not along the coast of Aracan, although in October and November, that coast may be approached within any discretional distance,* being the windward shore; for in the *early* part of the N. E. monsoon, the coast of Orixa should be avoided, because *then*, the current generally runs strong to the southward along that coast.

About the end of December, the southerly current begins to abate on the coast of Orixa, after which, many ships approaching the entrance of Hoogly River, fall in with that coast about Point Palmiras or the False Point, and from thence soon reach the entrance of Sagor Channel, by standing out to sea into deep water, and afterward to the northward; but it is prudent during the whole of the N. E. monsoon, to work up in the middle of the bay, or nearest to the eastern side, and endeavour by a direct route, when confident of the longitude, to strike soundings on the tail of Sagor Sand, or the Eastern Sea Reef, without approaching the coast of Orixa, or too near that of Aracan; agreeably to the directions already given, for approaching the River Hoogly in the N. E. monsoon.

During the whole of this monsoon, ships bound from Achen or Malacca Strait to Bengal, have the choice of proceeding by any route that circumstances require; they may pass outside the Nicobar Islands, or through any of the channels between them and the Little Andaman, or that formed between the latter Island and Great Andaman; but it seems preferable for ships coming out of Malacca Strait, after taking a departure from the south end of Junkseylon, to steer for the Island Narcondam, and pass through the channel betwixt the north end of the Great Andaman and Coco Islands, or between the latter and the Island Preparis, which are both good channels.† Having passed through either of these, they should steer to the northward close hauled for the entrance of Sagor Channel, making a direct course if the winds permit, or by tacking occasionally, without borrowing too near the Coast of Aracan.

And from Malacca Strait.

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# *DIRECTIONS for SAILING from BENGAL to MADRAS,*

## AND THE SOUTHERN PARTS OF THE BAY, DURING BOTH MONSOONS.

TO SAIL from Bengal to Madras, and to the southern parts of the bay, the best time to make a good passage, is from the middle of October to the middle of February, when the N. E. monsoon generally predominates.

To sail from Bengal to the Coromandel Coast in September,

* Ships that sail indifferently upon a wind, ought to keep farther to the eastward than others which sail well.

† The brig Daphne, Capt. Holl, is said to have struck on a rock, a few years ago, which bears south 7 miles from the Little Coco, although that vessel was drawing only about 10 feet water at the time. This statement was communicated to me, by Capt. Henderson of the Resource, belonging to Calcutta; which, if correct, will render the channel between the Little Coco and Great Andaman, not so safe as thought to be hitherto.

Ships leaving Bengal in September, bound to Madras, or any other part of the Coromandel Coast, ought to keep near the western shore; the prevailing winds in this month will be found from S. S. W. to West, often light and baffling, with a drain of current to the northward at times. If after leaving the pilot, the wind keep well to the southward, a ship ought to stand for the western shore, and work along it to the S. Westward, keeping mostly in soundings, so long as her progress is considerable. Should that be very slow, it may be expedient to stand well out from the land, and take every advantage of the shifts of wind; for at times, when the current sets to the N. Eastward along the coast, there is none in the offing. At other times, the current runs to the N. Eastward in this month in the open sea, when there is none upon the Coast of Orixa, so that the most speedy passage is at one time experienced in September, by keeping along the coast; and at another time, by keeping well out from the land.

It would, however, be very imprudent, for a ship bound to any part of the Coromandel Coast in this month, to stand out into the middle of the bay, as the wind prevails at times from westward.

and in October and November, to that coast or to Ceylon.

In October and November, ships should keep within a moderate distance of the coast, prepared for bad weather, which is then liable to happen; after the middle of October, they may experience N. E. winds for several days after leaving the pilot, but will *most probably*, meet with them variable when well to the southward, sometimes from S. W. in the offing, but close to the coast, generally from Eastward.

To whatever part of the Coast of Coromandel a ship is bound, after the middle of October, she must get in with the land to the northward of that place, to prevent being carried past her port of destination by the strong currents, which prevail part of October, November, and December. If bound to Madras, it will be prudent to make the land about Pulicat, and take care not to pass that place until in soundings.

When bound to Trincomale, or any place on the east side of Ceylon in the same season, a ship must likewise endeavour to make the land to the northward of her port, or she will, most probably, be carried round on the south side of that island by strong southerly currents; but the entrance of Palk's Bay, between Point Calymere and the north end of Ceylon, ought not to be approached close, as the current sometimes runs through it to the westward, and with a N. E. gale it becomes a dangerous lee shore.

In December.

In December, the same route as in the preceding month is proper; a moderate distance from the coast should be preserved, where the wind will in general be found more steady than close in with the shore. In this month also, the current generally runs strong along the coast to the southward, rendering it necessary to make the land to the northward of the intended port.

If the weather is moderately clear, a ship may haul in for Armigon Hill in the day, which will be seen when 2 or 3 leagues outside the shoal; in the night, it should not be approached, being steep to.

A ship making the land about Pulicat, or a little to the northward of Madras in these months, when a strong southerly current may be expected, ought to haul into 16 or 17 fathoms if it is night, and when past Pulicat Reef, she may borrow into 11 or 12 fathoms; as Madras is approached, the light will soon be seen to guide her into the road, if the weather is clear; otherwise, she ought to anchor to the northward, or work to windward during the night, to prevent being driven to leeward. Ships having a cargo to discharge at any of the ports on the coast during the N. E. monsoon, ought to anchor a little to the northward of the landing place, or with it bearing about West, that the loaded boats may be enabled speedily to reach the shore.

In January,

Ships passing from Bengal to the Coast in January, should keep at a moderate distance from the land, out of the influence of light or variable winds, and when nearly in the latitude of the port to which they are bound, ought to steer for it.

If the wind is found to blow strong from N. Eastward, it will be prudent to haul in for the land a little to the northward of the port, but if the month is far advanced and the winds light or variable, they should after reaching its parallel, steer for it direct.

In February, ships leaving the pilot ought to keep well out from the Coast of Orixa, by steering to the southward; the light winds, and land and sea breezes near the shore, will then be avoided, for in the middle and eastern parts of the bay in this month, gentle N. Easterly winds generally prevail. In February.

After the beginning of this month, when they approach the Coromandel Coast, S. Westerly breezes and a current running along it to the northward, *will probably* be experienced, making it advisable to keep well out in the open sea, until they are able to make the land a little to the southward of the port to which they are bound; or, if the wind continue steady from the Northward or N. E. as they draw near it, a course should be steered for it bearing about west; but they should not make the land to the northward of their port, after the 1st of February.

During the whole of the N. E. monsoon from September to March, ships bound to the east coast of Ceylon ought to fall in with it to the northward of their port; if bound to the opposite side of that island, or to the Malabar Coast, they should endeavour to make the land about Aganis, or to the northward of the Basses; then coast round the South, and S. W. sides of the island.

In March and April, ships departing from Bengal for the Coromandel Coast or Ceylon, will most probably have the winds at first variable between S. S. W. and West, with which they ought to steer to the southward; if the wind be fair, a south course is the best, or S. S. E., as the winds may permit; they will be found in March, generally light and variable in the middle of the bay, mostly between West and N. Eastward, but near the western side, mostly from S. Westward. In March and April.

To benefit by light northerly winds in these months, ships ought to keep to the eastward of the meridian of Point Palmiras, until they are well down the bay, taking care not to approach the Great Andaman Island, particularly if it is late in April; for then, a gale from the westward is liable to happen, which in such case, would make it a dangerous lee shore.

After having taken every advantage of the shifts of wind by tacking when necessary, it will be prudent that they proceed about 20 leagues or more to the southward of the intended port, before they haul across the bay towards it, making due allowance for a strong current running to the northward, with southerly winds, which will be experienced as they draw near the land.

If it is late in March or early in April, when ships leave Bengal River, light S. W. and S. S. W. winds may be expected to predominate throughout the middle and western parts of the bay; but to the eastward of the Andaman Islands, they are generally from N. Westward at the same time; on this account, some ships bound to Europe, or by the southern passage to Bombay, proceed to the eastward of these islands, and on either side the Nicobar Islands as seems most eligible; but when the winds permit, the route to the westward of all the islands is preferable, taking care to avoid the bank with 4½ fathoms on it, about 9 or 10 leagues to the westward of the Great Andaman. Ships ought, on that account, to work or pass down the bay well to the westward of these islands, particularly late in April.

Ships bound to the east coast of Ceylon in March and April, ought to keep well to the eastward in passing down the bay, agreeably to the directions given for proceeding to the Coromandel Coast; having reached lat. 10° N., and nearly on the meridian of Point Palmiras, or that of the sea reefs, a course should be steered for the land to the southward of their port, as the currents set strong to the northward at times along the east side of Ceylon in these months. If bound to the west side of that island, or to the Malabar coast, they should from lat. 9° or 10° N., steer for the southern part of Ceylon, and endeavour not to fall in with it to the northward of the Great Basses.

To pass round Ceylon in these months.

Ships bound to the Malabar Coast in these months, ought not to keep near the Island after reaching Point de Galle, for brisk S. W. winds often blowing into the Gulf of Manar, make it then advisable to stretch out from the land, and get well to the westward, that they may be enabled to round Cape Comorin without loss of time.

To sail to Malacca Strait in the N. E. monsoon.

DURING THE N. E. MONSOON, from September to May, ships bound from Bengal to Achen or Malacca Strait, should steer to the S. Eastward, and pass between Cape Negrais and the Island Preparis, or betwixt the latter and Coco Islands; from thence a direct course may be adopted to Pulo Way, if bound to Achen; or to Pulo Bouton, if bound through Malacca Strait, or to Prince of Wales' Island. The currents on the east side of the Bay, and about the Andaman Islands in March, generally set to S. W. and Southward, making it advisable to keep well to the eastward, if it is intended to pass through any of the channels to the northward of these islands.

Should a ship fall to leeward, she ought to steer to the westward of the Great Andaman, and pass between it and the little Andaman, if the wind and currents permit; otherwise, she must work to the eastward betwixt the latter and the Island Carnicobar, which will considerably protract her passage; it is therefore prudent to keep well to the eastward after leaving the pilot, and proceed to the northward of the Island Preparis. The currents between these islands and Junkseylon, are very variable in the N. E. monsoon; in the early part of it they mostly set to the N. Westward, but at the sequel in March and April, generally to the S. W. and Southward.

How to proceed down the bay in the S. W. monsoon;

IN THE S. W. MONSOON, ships leaving Bengal, whether bound to the Coromandel Coast, to Ceylon, to any place west of Malacca Strait, or by the southern passage to Bombay, or the Persian Gulf, must endeavour to keep well to the westward in passing down the bay, and avoid the Andaman Islands, where the squalls are often sudden and severe, with dark cloudy weather, rendering it almost impossible to get to the southward, when ships fall in with them in this season.*

to the Coromandel coast,

Ships departing from the River Hoogly from April to September, to prevent getting over to the eastward, ought soon after quitting the pilot to tack, when the wind will admit the western shore to be approached about the False Point. They will find the winds veer frequently toward the land in the night, favorable for standing to the southward, and in the day generally blowing along shore, or inclining a little from the sea. With these winds they ought to work to the southward along the coast, endeavouring to be well in with the shore when the land breezes may be expected, between midnight and 2 or 3 o'clock in the morning. In June and July, these land winds often prevail, when a passage may at times be made from the pilot to Madras in 10 or 12 days; at other times, they do not happen, when the along shore winds are prevailing; but as this is the windward coast, where the sea is more smooth, and the weather more favorable than in the middle and eastern side of the bay,† ships should resolve to keep near it, so long as they make considerable progress to the south-

* Bound from Bengal to Bombay by the Southern Passage, the King George, (in which ship I was) left the pilot 29th May, 1791, and made the Centinel and west side of the Andamans, 7th June, having experienced about one degree of easterly current from leaving False Point, seen on the 30th May. She met with sudden severe squalls and very unsettled weather close to these islands; gained no ground whilst endeavouring to weather them, carried away her fore-yard on the 10th of June, was forced to run to the northward round the north end of the Great Andaman, and proceeded to Prince of Wales's Island to replace the fore yard. There, she found another ship bound to Bombay (that had left the pilot before her) getting repairs, having disabled a lower mast, and sustained other damage, on the west side of the Andaman Islands.

† Many ships deeply laden with rice, after leaving the River Hoogly in June, and some in July and August, have encountered storms, with a heavy turbulent sea, and foundered with their crews in the N. E. part of the bay.

ward. If on the Coast of Orixa the current is found to run to the northward, without any favorable breezes from the land, rendering it difficult to gain much ground, a stretch to the S. E. may be made about 23 or 25 leagues from the land, where *probably* there will be less contrary current than in soundings; but it would be imprudent to stand far over into the bay, in search of better winds.

By keeping near the coast, or within a moderate distance, making a stretch close in at times when the land breezes are expected in the night, these favorable breezes will become more certain as the distance is increased to the southward; having got as far as Point Gordeware, it will not be necessary to approach the shores of the deep bays situated between that point and Pulicat, but a stretch may be made from the point to the southward until past them, then work in for the coast about Armigon, or between it and Pulicat. The land breezes will now become more regular, with sea breezes from S. Eastward in the day, enabling ships to proceed along the coast with facility.

Ships bound to Trincomale, must continue to work along the Coast of Coromandel to Negapatam, before they stretch across the entrance of Palk's Bay for the Island Ceylon. to Ceylon.

Ships departing from Bengal, and bound to Achen or Malacca Strait in the S. W. monsoon, ought to proceed nearly by the same route as in the opposite season. After leaving the pilot they should stand to the S. S. Eastward as the winds may permit, until to the southward of lat. 15° N.; if then certain of their situation, a direct course may be steered for the Coco Islands, or rather for Landfall Island off the north end of the Great Andaman. and to Malacca Strait.

If not confident of their situation, it will be prudent to get into lat. 14° N., previous to edging away for the channel betwixt Landfall Island and the Cocos, which ought to be chosen, because it is farther to windward than that between the latter islands and Preparis; and the winds frequently inclining to S. W. or S. S. W. in the early part of the S. W. monsoon, render it advisable not to fall to leeward.

Having passed between the Coco Islands and Landfall Island, they should keep nearly close to the wind, in proceeding to the southward, to avoid the Archipelago of Islands off the coast of Tanasserim, which are not safe to approach in the S. W. monsoon, as they are not well explored, and form a dangerous lee shore. Neither should the east side of the Andaman Islands be borrowed on too close, in case of getting near the Invisible Bank, which is very dangerous to approach in thick weather, or in the night. To prevent either of these extremes, a course may be steered from the Coco Islands direct for Barren Island; and from the latter, after passing it on either side as most convenient, ships may keep nearly close to the wind if bound to Achen, giving the Invisible Bank and Nicobar Islands a proper birth. If bound to Prince of Wales's Island or Malacca Strait, it will not be requisite to keep so close to the wind; but, nevertheless, prudent to steer well to the southward, to give a sufficient birth to the Seyer Islands and S. W. end of Junkseylon in passing, in case S. Westerly winds should prevail off that headland, which is not always the case in the S. W. monsoon. When round Junkseylon, a direct course ought to be steered for Pulo Bouton, and from thence to Prince of Wales's Island.

# *DIRECTIONS for SAILING from BENGAL, MADRAS, or OTHER PARTS of the BAY;*

## BY THE SOUTHERN PASSAGE TO BOMBAY, OR OTHER PLACES TO THE WESTWARD, DURING THE S. W. MONSOON.

How ships bound to Europe, or the Western parts of India, should pass down the bay in the S. W. monsoon.

THE DIRECTIONS given in the last section, will answer equally for ships proceeding from Bengal to the Coromandel Coast, or to the western parts of India, during their passage down the bay. In the former case, it is indispensable that ships bound to the coast, or to Ceylon, do keep near the land on the west side of the bay, during the strength of the S. W. monsoon.

The same route is advisable for ships proceeding to the western parts of India, or to Europe, although it is not so particularly requisite that these continue to keep close to the land.

If after leaving the pilot, the wind keep well to the westward, a long stretch down the bay may be made; when it veers to S. W. and S. S. W. they should tack, and stand in for the western shore, taking particular care not to get over to the eastward near the Andamans. Should it be found, that they get fast to the southward by keeping near the coast, it will be prudent to continue to do so. On the contrary, if there, the progress is very slow, they ought to stand close hauled to the southward, and by tacking with the favorable shifts of wind, embrace every advantage to make southing in the middle of the bay. When with the prevailing winds they can pass 30 or 40 leagues to the westward of the Little Andaman, they ought to continue to stand to the southward; for in such case, they will *most probably*, be also able to pass to the westward of the Nicobar Islands and Achen Head, without tacking.

Ships that come out of the bay far to the eastward, will generally find it tedious getting to the southward between lat. 3° or 4° N. and the S. E. trade wind; which is occasioned by light variable winds and squalls, mostly from South and S. Westward in the vicinity of the islands near the west coast of Sumatra; whereas, ships that stretch to the southward from the east part of Ceylon, experience few light winds in passing from the S. W. monsoon to the S. E. trade.

To sail out of Malacca Strait in this monsoon.

SHIPS FROM MALACCA STRAIT, bound to Europe, or to Bombay by the southern passage in the S. W. monsoon, ought to keep along the north coast of Sumatra from Diamond Point to Achen, where the current will soon carry them to the westward, although calms and faint airs may be experienced.

From Achen, they should proceed out by the Surat Passage if the weather be favorable: otherwise, they must work close round the north end of Pulo Brasse, where the current frequently runs to the westward among these islands, when at the same time, it is running strong to the N. Eastward betwixt Pulo Rondo and the Nicobar Islands. Ships, therefore, ought not to attempt to work out in the great channel, but should either proceed through the Surat Passage, or rather betwixt Pulo Way and Pulo Brasse. Having got fairly out to the westward of Achen Head, every advantage must be taken to get to the southward into the S. E. trade, and to keep well out from the islands adjacent to the west coast of Sumatra, by tacking with every favorable change of wind.

To sail from Madras to the southward in the same season.

SHIPS leaving MADRAS in the S. W. monsoon, bound to Europe, or to the western parts of India by the southern passage, may when the land and sea breezes are prevailing, coast along to Pondicherry before they leave the land; but in the early part of the monsoon,

when the winds blow mostly along shore, with a strong current running to the northward in soundings near the coast, it is tedious and difficult to work along it to the southward. At such times, to prevent delay, it seem advisable to stretch off from Madras close hauled, with the along shore winds, for they will generally be found to veer more to the westward in the offing, particularly as the distance to the southward is increased. With these winds, ships ought to stand to the S. S. Eastward, and as the equator is approached the S. W. monsoon will decline, and the winds will draw more southerly; it will then be proper to stand close hauled to the S. Eastward, or on the tack that most southing can be made.

Toward Europe.

After getting the S. E. trade, ships bound to Europe generally steer a direct course to pass well to the southward of the Island Roderigue, and the south end of Madagascar; but those destined for the Red Sea, the Persian Gulf, or Bombay, have the choice of proceeding by 2 different routes to the westward; for which, brief directions have been given in a former section of this work, and some farther instructions in this place, may probably be of utility.

It may be observed as a *general rule*, that the farther the Island of Sumatra is distant, the nearer the S. E. trade winds approach the equator; and in June, July, and August, when they blow nearest to it, may be expected in from lat. 2° to 4° S.

Toward the western parts of India, by the northern route.

The Northern, or Short Route, should never be adopted except late in June, all July, and early in August, when the northern limit of the S. E. trade approaches nearest the equator. If a ship during this period cross it well to the westward, and having got into lat. $4\frac{1}{2}$° S. find a steady S. E. trade wind, she may run down her westing near that parallel, keeping between it and lat. 5° S. When she gets into lon. $73\frac{1}{2}$° or 74° E., it will be proper to avoid the north end of Speaker's Bank, by not exceeding lat. 4° 30′ S. whilst passing it; and she ought to keep nearly in the same latitude afterward, until sufficient westing is obtained.

And by the southern route.

The Southern Route is more certain at all times than that last mentioned, and it is only because *there*, in June, July, and August, the weather is often cloudy with rain, depriving the navigator of regular observations, that some prefer the Northern Route in these months.

When ships cross the equator far to the eastward, or depart from Sumatra or Java, the Southern Route ought to be followed; and should be adopted always in May, part of June, August, and the early part of September, by ships making the southern passage to Bombay, or other places to the westward.

To proceed by it.

A ship proceeding by this route, should get into lat. 9° to 10° S. as speedily as possible, where a steady and strong trade will generally be found, to run down the westing. If not certain of her lon. by observation or chronometer, it will be advisable to steer for the Island Diego Garcia to correct the reckoning, and where water may be obtained if wanted; otherwise, she ought to continue in lat. 8° or 9° S. until she is 40 or 45 leagues to the westward of that island. If Diego Garcia is seen, it may be advisable to make a course from its south end, either W. $\frac{1}{4}$ S. or W. by S., to give a birth to the Centurion's Bank, and to Owen's Bank, the former bearing from it W. 7° S. distant 33 leagues, having never been explored, but is *probably* not dangerous. Owen's Bank lies to the N. W. of Centurion's Bank, and they have been described under the Secton, "Chagos-Archipelago."

To whatever place a ship is bound, sufficient westing should be made to the southward of the equator, to enable her to make a fair wind of the S. W. monsoon, which frequently hangs far to the westward and blows strong, producing a current to the eastward.*

Toward the Red Sea;

Being between 2° and 3° to the westward of Diego Garcia, or in lon. 70° E., a ship may begin to steer a little to the northward of west. If bound to the Red Sea, she ought to pass near the northernmost of the Seychelle Islands, and from thence steer a course to cross the

* Several ships when navigated by dead reckoning, have fallen in with the Maldiva, or Laccadiva Islands, and were obliged to stand back into S. lat. to run down more westing. The St. George, bound from Bengal to Bombay by the southern passage, got into the Gulf of Manar in June, 1791, when they reckoned themselves 7° or 8° to the westward of Cape Comorin, by which they lost their passage, aleeady mentioned in the description of the Gulf of Manar.

equator in lon. about 49° or 50° E. By crossing it well to the westward, she will find the S. W. monsoon favorable in proceeding for Cape Guardafui, and particular care is requisite to fall in with the Coast of Africa to the southward of that headland; should she be carried past it by the current, the difficulty of getting in with the land in opposition to a strong southerly monsoon, and lee current, would be found *probably* insurmountable, in an indifferent sailing ship.

From Cape Guardafui, she must work along the Coast of Africa to Burnt Island, or farther against westerly winds prevailing in this season, before she stretch over for the land of Cape Aden, or rather the coast about Cape Arimora, if the wind admit.

Toward the Persian Gulf,

A ship bound to the Gulf of Persia, ought to cross the equator in lon. about 54° or 55° E. and follow the directions given for sailing to that gulf, in a former section of this work.

And toward Bombay.

Having made 2½° or 3° westing from Diego Garcia, a ship bound to Bombay, should steer to the N. Westward, and cross the equator in lon. about 64° or 65° W.; if the lon. is not correctly known by observation, she ought to have 3½° West variation on the equator, which will, *if the compass is right*, place her in the lon. mentioned; to the eastward of which, it would be imprudent to cross the equator in the strength of the S. W. monsoon, more particularly in a ship that sails indifferently with a strong wind and a high sea upon her beam; which are liable to prevail from W. S. W. and Westward during this season, between the equator and the Coasts of Arabia and Hindoostan.

In steering to the northward, a ship ought to keep far to the westward of the Laccadiva Islands and not approach the coast until she get into the lat. of the Island Kanary at the entrance of Bombay Harbour, at least 20 or 30 leagues to the westward of that place; she may then follow the directions already given, for approaching Bombay Harbour in the S. W. monsoon.

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## *DIRECTIONS for SAILING between BENGAL or MADRAS, and the STRAIT of MALACCA,**

Mr. Carnegy's instructions for navigating between Penang, Madras, and Bengal.

SHIPS LEAVING BENGAL in the N. E. monsoon, bound to the Strait of Malacca, should at leaving the pilot, keep their wind to weather the Island of Preparis, or pass close to the westward of it, when they will have a fair wind all the way down. They will experience a current to the westward, crossing from the sand-heads to Cape Negrais of perhaps 90 to 100 miles. Ships should haul close round Junkseylon and the Brothers, and if they can go within Pulo Bouton they ought to do so, as there is a strong off-set or current to the westward all along the bay.

Ships leaving Bengal, bound for the Strait in the S. W. monsoon, should on leaving the pilot keep the wind free, and pass between the Great Andaman and the Coco Islands, or to the eastward of the Cocos if they cannot be weathered with ease; but be careful of coming near the Preparis in this monsoon, as there is a shoal lies out to the W. S. W. of the South end of the Island 3 or 4 leagues.† After passing these islands they should keep the wind a

* By Mr. James Carnegy, Merchant at Prince of Wales's Island, who was formerly an experienced Commander in the country trade.

† The Brig Athena, Captain Daniel, bound from Rangoon to Bengal, was wrecked on the outer sandy islet of this reef in the night of the 26th of July, 1815, which he states to be about 12 miles distant from Preparis Island. Capt. Balston, of the ship James Drummond, (who took Capt. Daniel and part of his people from the islet on the 13th of August, the rest having previously quitted it on a raft) describes the reef as "extending to the southward about 20 miles, in detached patches,—many parts dry at low water." Perhaps this estimated distance is too great, although it is certain this dangerous reef extends a great way out to the S. Westward of Preparis Island, and ought to have a wide birth in passing.

little free, and steer for the Seyer Islands, then pass to the eastward or westward of Pulo Bouton as may seem proper.

Departing from Madras for Malacca Strait in the S. W. monsoon, I would advise making a fair wind, and steer to go through the Ten Degrees' Channel, in place of sailing close by the wind for Achen.

Leaving Madras for the Strait in the early part of the N. E. monsoon, it *may be* best to fetch where you can to the southward of Achen Head, then work through the Surat or Bengal passage, and afterward along shore to Diamond Point, from whence you can cross over to Pinang.

In the latter part of the monsoon, or after the 15th of February, when the southerly winds have set in, it may be best to proceed along shore as far as False Point, or even to Point Palmiras, then stand off, to pass through one of the channels between the Great Andaman and Cape Negrais, as if coming from Bengal.

Ships leaving the Strait of Malacca for Bengal in the N. E. monsoon, should go to the eastward of the Andamans, if the wind be favorable; but they ought not to lose any time, tacking about, as the farther they are off the eastern, or weather shore, the more the wind will draw to the eastward; so rather than lose time, they should pass through the Ten Degrees' Channel, and after reaching lat. 18° to 19° N., if not far enough to the eastward, they can make a stretch that way for a day, or more if necessary. The pilots in this monsoon, are found between the Eastern Sea Reef and Sauger Sand, in lat. 21° 05′ N. In the S. W. monsoon, they are found in 12 to 15 fathoms water, between Point Palmiras and the Western Sea Reef.

Ships leaving the Strait and bound to Bengal or Madras in the S. W. monsoon, or if bound across the equator, should keep close along the Pedir Coast, where a current to the westward will always be found in their favor, and a land wind at night. They should go through Achen Road, and if blowing weather prevail, anchor for a few days until it moderates, then push through the Bengal Passage, and they will weather the Nicobar Islands with ease; from hence, ships bound to Calcutta will have a fair wind. If bound to Madras, they may probably, (if the wind hang far to the westward) be obliged to tack now and then to get to the N. Eastward, but on no account cross the equator, to get westing, sooner make the Coromandel Coast, and beat down along shore. Ships bound across the equator, to Europe, or other western ports, at leaving the Bengal or Surat Passage, ought to carry a press of sail to get westing.

In the S. W. monsoon, a fast sailing ship bound to Calcutta, may always with safety, go *also* up within the Andaman Islands, and pass the Coco Islands either to the eastward or westward; but it is preferable to pass to the westward, being in such case more to windward, and from hence, she will with ease fetch Point Palmiras, or even the False Point if wanted.

END OF VOLUME FIRST.

# APPENDIX TO VOL. I.

## *DISCOVERIES in the GULF of PERSIA.*

SEVERAL ISLANDS having been lately discovered in the Persian Gulf, by H. M. ships Hesper and Favorite, whilst cruizing there at different times, to protect the trade from the depredations of pirates; it becomes necessary to point out the situations of those islands, which information was not received in time to be incorporated into its appropriate place in this work. Islands discovered in the Persian Gulf.

In June and July, 1813, the Hesper, steered to the S.Westward along the Arabian side of the Gulf, between that coast and the large island Zara, until she reached lat. 24° 30′ N., about lon. 53° 30′ E., where she anchored in 6 fathoms loose sand and shells about 3 leagues off shore, with the Town of BOOTHABEEN distant about 3½ leagues to the E. S. Eastward; here she remained from the 30th of June, till the 3d. of July. The Town of DEBAY, in about lat. 25° 11′ N., was thought to lie about 10 or 11 leagues to the S.Westward of Sharga; and between Debay and Boothabeen, the coast appeared low, and sandy, interspersed with trees, some huts, and small villages. The soundings were very shoal and irregular, over a bottom of loose white sand, small shells and stones; in several places, the Hesper had only 4 or 4½ fathoms water at the distance of 5 or 6 miles from the shore; and from 4 or 5, to 8 and 9 fathoms, when 4 or 5 leagues off. The current, or tide, appeared to be weak and irregular. Boothabeen Town, and Debay. Arabian Coast, or south side of the Gulf.

The weather being thick and foggy, observations were not obtained to ascertain correctly the direction of this coast, but from the Town of Debay it takes a direction more southerly than hitherto supposed, extending to lat. 24° 22′ N., about 6 or 7 leagues to the S.Westward of Boothabeen. A very spacious and deep concavity, is thereby formed between Debay and Ras Reccan, containing many islands not known to European navigators; of which, the following have been seen, and partly explored by H. M. ships Hesper and Favorite.

ZARA, in about lat. 25° 10′ N., lon. estimated 53° 46′ E. (the body of it) appeared to be about 5 leagues in extent East and West, distant 9 or 10 leagues from the nearest coast, and bearing about N. by E. from the town of Boothabeen. The Hesper had 14 fathoms water in passing near the East end of this island, and the depth decreased irregularly in steering from thence toward the coast, and near Boothabeen, where she anchored as mentioned above. Zara is the easternmost of these islands, which lie in the deep concavity on the Arabian side of the gulf. Geo. site of Zara Island.

Eight islands now to be described, were discovered by H. M. ship Favorite, Capt. Maude, in July, 1816, and their situations ascertained by observations and chronometer; with their Arabic names.

DAUSS, in lat. 25° 10′ N., lon. 52° 45′ E., appeared of moderate height, 6 or 7 miles in extent E. S. E. and W. N. W., of a metallic aspect, destitute of trees, with a few small hummocks, the S. Western extremity a low sandy point. In passing this island at 4 or 5 leagues distance, had soundings from 13 to 18 fathoms coarse sand, with some overfalls. Geo. site of Dauss.

JARNAIN, in lat. 25° 8′ N., lon. 52° 55′ E., bearing E. S. Eastward from Dauss, and thought to lie about 10 leagues to the West of Zara, has 3 high hummocks nearly of equal height, 2 on the northern extremity, and 1 to the southward. When seen bearing S. E. by S. 5 or 6 leagues, it appeared to have no vegetation, but the weather was hazy at this time. Geo. site of Jarnain.

ARZENIE, situated in lat. 24° 56′ N., lon. 52° 33′ E. to the S. W. of Dauss, is of considerable elevation, and rugged in appearance, about 7 miles in extent East and West, and 2 or 3 miles in breadth: about a cable's length off the eastern and western extremities, lie 2 rocks a little above water; and on the N. E side, a shoal projects nearly a mile from the shore, composed of rocks and coral sand. The Favorite anchored in 12½ fathoms fine coral sand and shells, with the centre of the island bearing S. by E. ½ E., distant 5 or 6 miles. No fresh water was discovered on the island, but from ravines occasioned by heavy rains, water might probably be got by digging wells. The soil consists of a metallic substance, on which grow only a few herbs, but no trees, and the southern side of the island is very rugged, its western extremity terminating in a low sandy point. Geo. site of Arzenie.

Geo. site of Dalmy. DALMY, in lat. 24° 36′ N., lon. 52° 24′ E., bearing to the S. W. of Arzenie, when viewed at 4 leagues distance, appeared rather high, and of darker colour than the former island. On its northern part there is a round hill, below which the boundary is bluff, but not high; and the northern extremity terminates in a low sand, from which a shoal projects nearly 2 miles, and ought not to be approached under 7 fathoms, as the overfalls are sudden. To the S. Eastward, the island is nearly of equal height, with 2 or 3 hummocks above a very low sandy point extending from North to South, and it is about 6 miles in length; beyond which, the pilot said, a shoal extends to a considerable distance, and that it is not safe to go to the southward of this island, as there are sudden overfalls, with several small islands and sand banks projecting from the main land of Arabia, which is said to be very low, and distant 20 miles to the southward of Dalmy. The channel between this island and Arzenie, is clear of shoals, but the overfalls are sudden, from 15 to 21, and from 12 to 7 fathoms, fine coral sand. Variation off Dalmy 4° 47′ West.

Geo. site of Seer Beni Yass. SEER BENI YASS, in lat. 24° 34′ N., lon. 52° 40′ E., situated to the eastward of Dalmy, when bearing S. E. by S. 5 leagues, appeared rather high in the centre, of very rugged aspect, about 7 or 8 miles in extent, its N.Western extremity terminating in a low sandy point. This island, by the pilots account, nearly joins to the main land, leaving a narrow channel, navigable only by small pearl boats. The channel between Arzenie and Seer Beni Yass, was said by the pilot to be safe. From hence, the whole coast to the westward, is very low, off which lie several small islands, considered dangerous to approach.

Geo. site of Danie. DANIE, in lat. 25° 1′ N., lon. 52° 20′ E., bearing N. Westward from Arzenie, is about 2 miles in length, and very narrow, low, and nearly level with the sea. The colour of the sand resembles the horizon so nearly in hazy weather, that great caution and a good look-out are necessary in approaching this island. Variation here 3° 59′ West.

Geo. site of Sherarow. SHERAROW, in lat 25° 13′ N., lon. 52° 18′ E., to the N. N. W. of Danie, appeared low and narrow, about 3 or 4 miles in length, with 2 small hummocks on each extremity; and ½ a mile off the northern point a small rock above water, with some smaller rocks at the foot of the hummocks, which appeared to be formed of a dark metallic substance. In a westerly direction from this island, the coast ought to be approached with care, as it is very low, but said to be clear of shoals. The channel between Danie and Sherarow, although clear of shoals, has too little water for large ships, as the overfalls are sudden, and the Favorite had 3¾ fathoms the least water, sand mixed with white coral.

Geo. site of Hawlool. HAWLOOL,* in lat. 25° 41′ N., lon. 52° 23′ E., situated to the N.N. Eastward of Sherarow, when bearing N. N. W. 10 miles, appeared high in the centre, decreasing gradually at each extremity; it is destitute of trees, no appearance of vegetation, with deep water close to.

The above described islands appear to be formed of the same metallic substance as Polior, and the other islands on the Persian side of the Gulf, being of a brownish colour, with a coral base: they are situated nearly in the centre of an extensive pearl fishery, which affords perhaps the best pearls in the world; and the season for this fishery is from April to September.

Geo. site of 3 Low Islands. THREE LOW SANDY ISLANDS, in lat. 27° 40′, to 27° 44′ N., lon. 49° 26′, to 49° 34′ E., supposed to lie about 10 or 12 leagues to the westward of the small islands ZEZARINE and KEYN, were seen by H. M. ship Hesper on the 25th of May, 1813, and her boat landed on the 2 easternmost. These bear nearly North and South of each other, 3 or 4 miles, with 10 fathoms water between them, and soundings of 28 to 30 fathoms a little to the eastward; the third island, was seen from the deck of the Hesper, and is situated 3 or 4 leagues to the westward of the former.

Geo. site of Sandy Island. SANDY ISLAND, in lat. 27° 52′ N., lon. 49° 25′ E., situated about 5 leagues to the northward of the 3 islands mentioned above, was seen also by the Hesper, on the 24 of May, on which her boat landed; she passed close to it on the West side in 17 fathoms water, and afterward steered to S. Eastward, on the East side of the 3 islands which form the southern group. All these islands are low, sterile, and destitute of water; and it is probable, other islands may lie nearer the Arabian Coast to the westward of these, as reported by some of the pilots.

* This seems to be the same island as that formerly seen by Commodore Watson, and called by him the Island May; for Capt. Maude, of H.M.S. Favorite, asserts, that no island exists in the situation hitherto assigned to the Island May.

# INDEX TO VOLUME FIRST

OF THE

# *INDIA DIRECTORY.*

NOTE.—The Places marked with *, have their Latitudes and Longitudes described in the work.—Those marked with †, have their Latitudes only inserted.—I, signifies Island, Is. Islands, R. River, C. Coast, Ca. Cape, E. East, W. West, N. North, & S. South.


A.

| | | Page. |
|---|---|---|
| *Abd-ul-curia I., | Arabian Sea | 203 |
| Abelkasal, | Persian Gulf | 269 |
| *Abrolhas Bank, | Brazil C. | 54 |
| Abrolhas Is. and | Point, Ditto | 55 |
| †Abu Duraja Pt. & | M. Seaof Suez | 229,230 |
| Abu Heyle, | Persian Gulf | 270 |
| †Abu Melle I., | Red Sea | 222 |
| *Abuschahr, | Persian Gulf | 265 |
| Abyssinia, | Red Sea | 212 |
| †Abyssinian Port, | Ditto | 223 |
| Achen, | Sumatra | 426, 432, 435 |
| †Adago Pt. & Mt., | Suez Bay | 230 |
| Adam's Bridge, | Gulf of Manar | 350,352 |
| †Adam's Peak, | Ceylon | 354 |
| *Addon Channel, | Maldivas | 343 |
| *Addon I., | Ditto | 343 |
| †Adelaide Bank, | Indian Ocean | 142 |
| *Aden Cape, | Arabia, S. | 207, 434 |
| *Aden Town, | Ditto | 208 |
| *Adoumatis Atoll, | Maldivas | 339 |
| *Adoumatis Chann | Ditto | 339 |
| *Africa E., | IndianOcean | 181to203 |
| *African Is., | Ditto | 121,141,174,175 |
| *Africa, South, | Southn.Ocean | 151,176 |
| *Africa, W., | S.Atlant. | 39,40,48to50 |
| *Agalega I., | Indian Ocean | 135 |
| *Aganis, | Ceylon, E. | 365 |
| Aganis Peak, | Ditto | 366 |
| †Agrib Mount, | Sea of Suez | 226, 227 |
| *Aguilhas Bank, | Africa, S. | 68, 80, 81 |
| *Aguilhas Cape, | Ditto | 80, 81, 176 |
| Aguilhas Current, | Ditto | 82 |
| *Agulla, | Persian Gulf | 271 |
| *Ais I., | Africa, E. | 205 |
| Aix I., | France | 2 |
| *Akaba Gulf, | Red Sea | 225 |
| *Albadra Is., | Indian Ocean | 137,175 |
| Alcatrasses Is., | Brazil | 58 |
| Alemparva, | Coromandel | 384 |
| †Alexander Port, | Africa, W. | 49 |
| Alexaner's Port, | Persia | 248 |
| *Algoa Bay, | Africa, S. | 83, 179 |
| *Algoada Point, | Malabar C. | 307 |
| *Alippee, | Ditto | 316 |
| *Allas Strait, | Sumbawa | 110 |
| *Alphonse I., | Indian Ocean | 139,175 |
| Aluer Strait, | Timor Sea | 109 |
| Alvoreda I., | Brazil | 58 |
| *Ambre Cape, | Madagas. | 121,132,158 |
| Amee Shoal, | Malabar C. | 308 |
| *Ameni I., | Laccadivas | 325 |
| *Amirante Is. | Indian Ocean | 141 |
| Ampapa R. | Mozambique | 190 |
| Amphilah Is. & | Bay, Red Sea | 212 |
| *Amsterdam I. | Southern Ocean | 92 |
| Andaman Is., | Bengal Bay | 425 to 434 |
| *Andrew St. Cape, | Madagascar | 156, 158 |
| Angassee Bay, | Hindoostan, W. | 277 |
| *Angaum I. & Sound, | Pers. Gulf | 257,258 |
| *Angazecha I., | MozambiqueChan | 167 |
| †Angenweel, | Malabar C. | 304 |
| Angola, | Africa, W. | 42 |
| Angoxa C., | Africa, E. | 188 |
| *Angoxa Is. & Shoals, | Ditto | 188 |
| †Angra Pequena, | Africa, W. | 50 |
| †Angrias Bank, | Malabar C. | 306 |
| †Anjediva I., | Ditto | 310 |
| *Anjenga & Peak, | Ditto | 318, 349 |
| Anna de Chaves Bay, | St. Thomas I. | 48 |
| Annesley Bay, | Abyssinia | 213 |
| Anne St. Cape, | Africa, W. | 47 |
| *Anno Bona I., | Gulf of Guinea | 40,41,48 |
| Ann St. Is., | Brazil | 55 |
| *Ann St. I., | Seychelles | 140 |
| *Ann St. Shoals, | Africa, W. | 47 |
| *Anthony St. I., | Cape Verds | 12 |
| Antioches, | France | 2 |
| †Anton Gill Bay, | Madagascar | 131 |
| *Antonio St. Cape, | Brazil | 53 |
| Antonio St. Cape, | Rio de la Plata | 60, 64 |
| †Antonio St. Cape, | Arabia, S. | 208 |
| Antonio St. Shoal, | Brazil | 54 |
| Antonio St. Shoal, | Africa, E. | 189 |
| Ants River, | Ditto | 182 |
| Anvil Rock, | Cape of Good Hope | 77 |
| *Anzuan I., | MozambiqueChan | 170 |
| Apollo Spit, | Bombay Harbour | 295 |
| Arabian C., | Arabian Sea | 174 |
| *Arabia W., | Red Sea | 215 |
| *Arabia, S., | Arabian Sea | 234 to 242 |
| *Arabia, E., | PersianGulf | 269 to 272 |
| Aracan C., | Bengal Bay | 411,423,427,434 |
| Arbores I., | Mozambique | 190 |
| †Archimeds Bank, | R. de la Plata | 63, 64 |
| Arena, | Abyssinia | 213 |
| Arewiaar River, | Ceylon, W. | 352 |
| Argo Flat, | Bengal C. | 419 |
| *Ari Atoll, | Maldivas | 335 |
| †Arimora Cape, | Arabia, S. | 208, 434 |
| Aripo, | Ceylon, W. | 352 |
| †Armegon, | Coroman. | 389,428,431 |
| Armstrong's Channel, | Bank's Strait | 96 |
| Arnoll I., | Malabar C. | 277 |
| Arosa Gulf, | Spain | 4 |
| Arrah, | Persia, S. | 249 |
| †Arroes Is., | Red Sea | 217 |
| †Artura I., | Gulf of Cutch | 275 |
| *Arubah, | Persia, S. | 249 |
| Asab Bay, | Red Sea | 210 |
| *Ascension I., | Atlantic Ocean | 32 |
| Aschafas Is., | Red Sea | 218 |
| Ashtola I., | Persia, S. | 249 |
| Aslo, | Persian Gulf | 263 |
| †Assar Pagoda, | Gulf of Cutch | 247 |
| *Asses Ears, | Arabia, S. | 237 |
| †Asses Ears, | Persian Gulf | 265 |
| †Assumption I., | Indian Ocean | 137 |
| Atalaya Church, | Rio de la Plata | 66 |
| †Atchera River, | Malabar C. | 306 |
| †Atomeri I., | Brazil | 58 |
| Attmeydon Flat, | Persian Gulf | 267 |
| Attui, | Red Sea | 216 |
| *Aucutta I., | Laccadivas | 324 |
| *Augustines St. Bay, | Madagascar | 85, 153 |
| *Augustines St. Cape, | Brazil | 51, 52, 53 |
| Aurangabunder R. | Scindy C. | 247 |
| *Aurora Shoal, | Red Sea | 222 |
| Australian Bight, | New Holland | 98 |
| Aycotta River, | Malabar | 316 |
| Aymaun, | Persian Gulf | 270 |
| †Ayt, | Abyssinia | 212 |
| †Azab I., | Persian Gulf | 255 |

B.

| | | |
|---|---|---|
| Bab-el-mandeb | Cape, Arabia, S. | 208 |
| *Bab-el-mandeb | I. & Strait, Red Sea, | 209 |
| Back Bay, | Arabia, S. | 208 |
| Back Bay, | Bombay I. | 296 |
| Back Bay, | Trincomale | 368, 371 |
| Back Stairs Passage, | Terra Australis S. | 94 |
| Badour, | Red Sea | 214 |
| *Bahia, | Brazil, | 53 |
| Bahrein I., | Persian Gulf | 271 |

| | | Page. |
|---|---|---|
| Bajone Point, | Africa, E. | 189 |
| Baker's Channel, | Ceylon, N. | 376 |
| Baker's River, | Africa, S. | 180 |
| Balco Fort, | Brazil | 54 |
| *Bald Head, | Terra Australis, S. | 93 |
| Baldrish Point, | Madagascar | 131 |
| Ballasore Bay, | Bengal C. | 401, 408 |
| †Ballasore R. | Ditto | 400 |
| Ballasore Road | Ditto | 401 |
| Ballena Point, | Rio de la Plata | 62 |
| Bally Peak, | Bally I. | 110 |
| *Bally Strait, | Java, E. | 111 |
| Bally Town, | Lombock I. | 110 |
| †Banches Vertes | France | 2 |
| *Bancoot R. | Malabar C. | 304 |
| *Banditti I., | Lombock Strait, | 110 |
| Bangadoony R. | Bengal | 418 |
| Bangarah R., | Ditto | 419 |
| †Bang Cape, | Persian Gulf | 267 |
| Bank's Strait, | VanDiemen'sLand | 95 |
| Banjoan I., | Timor Sea | 109 |
| Bansee Point, | Hindoostan | 279 |
| Banyan Tree, | Malabar C. | 305 |
| Barabulla Sand | Hooghly R. | 402 |
| Barain, | Basra R. | 268 |
| *Bareedy Harbour | Red Sea | 222 |
| *Barn Hill, | Africa, E. | 201 |
| Barn Hill, | Persian Gulf | 264 |
| †Barn Hill, | Malabar C. | 313 |
| Baron's Cap, | Ceylon, E. | 367 |
| †Barratulla R. | Bengal | 414 |
| †Barren I., | New Holland | 99 |
| Barren I., | Bengal Bay | 431 |
| Barren Is., | Bass' Strait | 96 |
| *Barren Is., | Madagas., W. | 159, 160 |
| Barry Cape, | Red Sea | 223 |
| *Barsalore Peak, | Malabar C. | 312 |
| Barwa R., | Coromandel | 396 |
| †Basidu, | Persian Gulf | 258, 259 |
| Basque Road, | France | 2, 3 |
| *Basra, | Euphrates R. | 269 |
| *Basra Bar, | Ditto | 267 |
| †Bassadore Point, | Persian Gulf | 257, 258 |
| *Bassas Cape, | Africa, E. | 200 |
| *Bassas de Amber, | Indian Ocean | 174, 175 |
| *Bassas de India, | Mozamb.Chan | 137, 166 |
| †Bassas de Patram, | Indian Ocean | 174 |
| †Bassas de Pedra, | Laccadivas | 323 |
| †Bassas d'Padra Banca, | Maldivas | 330 |
| †Basseen River, | Hindoostan, W. | 277 |
| *Basses Great, | Ceylon, S. | 361 to 365 |
| *Basses Little, | Ditto | 361 to 365 |
| *Bass' Strait, | Van Diemen's Land | 93, 95 |
| *Bate, | Guzarat | 275, 276 |
| *Baticola, | Ceylon, E. | 366 |
| Batt Cove, | Malabar | 310 |
| Bay of Seals, | Bass' Strait | 94 |
| Bayonne, | Spain | 2 |
| †Bayonne Is., | Ditto | 3 |
| †Bazaruto Is., | Africa, E. | 186 |
| Beacon Rock, | Red Sea | 225, 227 |
| †Bednore Mountns. | Malabar | 312 |
| Beercool Creek, | Hooghly River | 401 |
| Behenter I., | Madagascar | 131 |
| Belem Tower, | Lisbon | 4 |
| *Belior I., | Persian Gulf | 260 |
| Bell Cove, | Malabar | 310 |
| *Belle I, | France | 3 |
| Bellones Cape | Madagascar | 131 |
| Bellows Rock, | Cape of Good Hope | 77 |
| Bellows Rock, | Point de Galle | 357 |
| *Bembatooka Bay, | Madagascar | 156 |
| *BembatookaTown, | Ditto | 156 |
| †Benatha I., | Persian Gulf | 255 |
| Bencoolen, | Sumatra | 114 |
| Bender Dodja, | Red Sea | 216 |
| Bender-rigk Bay, | Persian Gulf | 267 |
| Bengal Bay, | India | 422, 432 |
| *Bengal C., | Bengal Bay | 417, 423, to 434 |
| Bengal Passage | Achen | 435 |
| *Benguela, | Africa, W. | 45, 49 |
| *Berbera, | Africa E. | 206 |
| †Berberyn I., | Ceylon W. | 355 |
| *Berdistan Cape, | Persian Gulf | 264 |
| Berdistan Shoal, | Ditto | 264 |
| *Berger I., | Seychelles | 142 |
| Berg River, | Africa, W. | 71 |
| Bervidaux Bank, | France | 2 |
| *Betra-par I., | Laccadivas | 323 |
| Bevian Bay, | Africa, W. | 72 |
| †Beypore River, | Malabar | 315 |
| Biafra Bight, | Africa, W. | 47 |
| *Bilboa, | Spain | 2 |
| Billiapatam R., | Malabar | 313 |
| †Bimlipatam, | Coromandel | 395 |
| †Bingaro I., | Laccadivas | 324 |
| *Bird I., | Seychelles | 140 |
| Bird I, | Trincomale | 369 |
| *Bird Is., | Africa, S. | 181 |
| Biscay Bay, | Spain | 1, 2 |
| *Black Pagoda, | Orixa | 397, 407 |
| †Black Point, | Arabia | 236 |
| Black Rock, | Johanna | 171 |
| *Blaze St. Bay & Cape, | Africa, S. | 176 |
| *Bligh's Cap, | Kerguelen's I. | 90 |
| Blinder Clip, | Africa, W. | 72 |
| Block House, | Africa, S. | 181 |
| Bloody River, | Africa, E. | 182 |
| Bluff Point, | Sandalwood I. | 109 |
| †Bogaishua Cape, | Arabia, S. | 236 |
| Boghrandie, | Malabar | 304 |
| Bogio I., | Madeiras | 6 |
| Bogway Point & Sand, | Cambay Gulf | 282 |
| Bogybogie R., | Bengal | 418 |
| †Bomany Creek, | Ditto | 420 |
| Bombay Har., | Malab. C. | 290 to 301, 434 |
| *Bombay I. & Castle, | Ditto | 291, 292 |
| Bominy Harbour, | Bengal C. | 421 |
| *Bomosa I., | Persian Gulf | 260 |
| *Bonavista I., | Cape Verds | 12 |
| Bonetta Shoal, | Ditto | 11 |
| Boobies I, | Roderigue I. | 123 |
| Bore, | Hooghly River | 416 |
| †Boria Point, | Malabar C. | 304, 305 |
| Boscawen's Passage, | Indian Ocean | 118 |
| *Bostana Ca. & Town, | Persian Gulf | 259 |
| †Botherem Bay, | Abyssinia | 214 |
| Boudeuse I., | Seychelles | 142 |
| *Bourbon I., | Indian Ocean | 122, 127 |
| *Bourbon Point, | Mauritius | 126 |
| Bouton Pulo, | MalaccaStrait | 434, 435 |
| *Bouvet's I., | Southern Ocean | 89 |
| Braba Point, | Rio de la Plata | 63 |
| Brasse Pulo, | Achen | 426, 432 |
| *Brava, | Africa, E. | 199 |
| Brava, I., | Cape Verds | 12, 16 |
| Brazen Head, | Madeira | 7 |
| *Brazil Bank | Brazil C. | 54 |
| Brazil Coast, | America, S. | 50 |
| Breaker's I., | Java, S. | 113 |
| †Breaker Point, | Sea of Suez | 229 |
| †Bringal Hill, | Malabar | 318 |
| †Broach R. & Point, | Cambay Gulf | 282 |
| Brothers | Socotra I. | 203 |
| †Brothers | Red Sea | 224 |
| Brothers | Junkseylon | 434 |
| Broughton's Grove, | Bombay | 291 |
| Brown's Gardens, | Johanna | 171 |
| Bucker Bunder, | Persia, S. | 250 |
| *Buenos Ayres, | America S. | 59, 64, 67 |
| Bugio Tower, | Lisbon Bar | 5 |
| Buffalo Mountain, | Africa S. | 178 |
| Buffalo Point, | Bengal | 419 |
| Buffalo Rock, | Malabar C. | 308, 309 |
| Bulcherry Flats, | Bengal | 415 |
| Bulramgurry, | Orixa | 400 |
| †Bulsaur River, | Malabar C. | 279 |
| †Bunder Abbas, | Persian Gulf | 256 |
| Buoy Rock, | Malabar | 319 |
| *Burbureea, | Africa, E. | 206 |
| *Burka Is. & Fort, | Arabia, E. | 243 |
| Burling I., | Portugal | 4 |
| *Burnt I., | Africa, E. | 205 |
| Burrapungah R., | Bengal | 418 |
| Burrow Hill, | Africa, E. | 185 |
| *Busheab I., | Persian Gulf | 262 |
| *Busheer, | Ditto | 265 |


## C.


| | | |
|---|---|---|
| Cebeceira Shoal, | Mozambique | 190 |
| *Cabo Fort, | Brazil | 54 |
| Cabo Reef, | Goa Bay | 308 |
| Caclops, | Lisbon Bar | 5 |
| Cadally Is., | Red Sea | 212 |
| *Cadiapatam Point, | Malabar | 319 |
| CadiapatamRocks, | Ditto | 319, 320 |
| Cagni I., | Maldivas | 331 |
| Calato Mount, | Africa, E. | 183 |
| *Calcutta, | Bengal | 403, 416 |
| Calcutta River, | Ditto | 401 |
| *Caldeira I., | Africa, E. | 188 |
| Caletar, | Coromandel | 396 |
| *Calicut, | Malabar | 315 |
| Calimony Point, | Ceylon, E. | 377 |
| Calingapatam R., | Coromandel | 395 |
| †Caliture, | Ceylon, W. | 355 |
| *Calmez Cape, | Abyssinia | 215 |
| †Calpentyn I., | Ceylon, W. | 353 |
| Calpooty I., | Laccadivas | 324 |
| *Calymere Point, | Coromandel | 380, 428 |
| Camara Is., | Sapy Strait | 110 |
| †Camaran I. & R., | Red Sea | 216, 217 |
| Camaroons R., | Africa, W. | 47 |
| *Cambay Gulf, | Guzarat | 281 |
| †Cambay, | Ditto 1st | 283 |
| Camberee I., | Malabar C. | 308 |
| Camels Hump, | Ditto | 315 |
| *Camfidia, | Arabia, W. | 216 |
| Camonco R., | Africa, E. | 191 |
| Cana Canim, | Arabia, S. | 236 |
| *Cananore, | Malabar | 314 |
| *Canara Coast, | Hindoostan | 310 |
| *Canary Is., | Atlantic Ocean | 9 |
| Cannibaz I., | Java, S. | 112 |
| Canonniers Point, | Mauritius | 125 |
| Canon Point, | France | 2 |
| *Cape Town, | Africa, S. | 76 |
| Caraba Banks, | Persian Gulf | 267 |
| Carapar R. & Hill, | Coromandel | 396 |
| Caranja I. & Hills, | Bombay Harbour | 291 |
| Caranja Shoal, | Ditto Ditto | 293 |
| *Cardamum I., | Laccadivas | 325 |
| Cardinals, | France | 2 |
| †Cardiva Chan. | Maldivas | 332 to 334 & 336 |
| †Cardiva I., | Ditto | 331, 332, 336 |

| | Page. |
|---|---|
| Cardiva I., - - Ceylon, W. - - | 352 |
| Caretas Rocks, - Rio de la Plata | 63 |
| *Cargados Garajos, Is. Indian Ocean | 133 |
| *Cargados Garajos, Bank Ditto Ditto | 133 |
| Caroco Rock, - Gulf of Guinea - | 47 |
| Carpenters I., - Gulf of Manar - | 349 |
| Carrangar Shoal, Sea of Suez - - | 227 |
| *Cartiers Bank, - Timor Sea - - | 103 |
| Carunapale, - - Malabar - - - | 317 |
| *Carvoeira Cape, Portugal - - - | 4 |
| *Carwar Head & Bay, Malabar - | 310 |
| Cascaes Light., - Portugal - - | 4 |
| Cassah I., - - Malabar - - - | 303 |
| Catastrophe Cape, Terra Australis | 93 |
| Catchediva I., - Ceylon, N. - - | 377 |
| *Catherina I, - Brazil - - - | 58 |
| Cat I., - - - Ceylon, N. - - | 377 |
| †Caverypatam R., Coromandel - | 382 |
| Cavoy River, - Malabar - - - | 313 |
| Caymel, - - - Ceylon, W. - - | 353 |
| Caxias, - - - Lisbon Bar - - | 5 |
| Centre Bay Rock, Red Sea - - | 213 |
| *Centurions Bank, Indian Ocean | 147, 433 |
| *Centurions Shoal, Red Sea - - | 224 |
| Cerrara R., - - Coromandel - | 389 |
| *Ceylon I., Indian O. | 350, 428, 429, 432 |
| *Chagos Archipelago, Indian Ocean | 144 |
| *Chagos I., - - Ditto Ditto - | 144 |
| Chalambaram Pagodas, Coromandel | 382 |
| Champ Chardon, France - - - | 2 |
| †Channel Creek, - Bengal - | 414 to 416 |
| *Chansely Cape, - Arabia, S. - - | 239 |
| *Chaos I., - - - Africa S. - - | 181 |
| Chapel I. & Point, Ceylon, E. - | 368 |
| †Chapra Fort - - Malabar - - - | 307 |
| Chassiron Tower, France - - - | 3 |
| †Chenee River, - Africa, E. - - | 196 |
| †Cherak Hill, - - Persian Gulf | 259, 261 |
| *Cherbaniani Bank, Laccadivas - | 322 |
| Cheroo - - - Persian Gulf - | 262 |
| Cheribon Hill - Java, I. - - - | 113 |
| *Chesterfield Shoal, Moz. Ch. | 159, 162, 163 |
| *Chewabad Bay - Persia, S. - - | 251 |
| †Chicacole River, Coromandel - | 395 |
| Chicklee Point, - Malabar, C. - | 308 |
| *Chico Bank, - - Rio de la Plata | 65, 66 |
| *Chidgulan Bay, - Java, S. - - - | 112 |
| †Chigo Hills, - - Gulf of Cutch - | 247 |
| †Chilau, - - - Ceylon, W. - - | 353 |
| Chillaby's Point, Basra River - | 268 |
| Chilka Lake, - Coromandel - | 396 |
| Chilney I., - - Scindy - - - | 248 |
| Chimney Hills, - Arabia - - - | 208 |
| Chimney Hill, - Ceylon E., - | 361, 365 |
| Chimnies Rocks, Seychelles - - | 140 |
| Chimpaykee Bay, Madagascar, W. | 158 |
| †Chiracole Fort, - Malabar, C. - | 307 |
| *Chitac I., - - - Laccadivas - - | 324 |
| Chittagong, - - Bengal Bay - | 421 |
| *Chitwa, - - - Malabar - - - | 316 |
| †Choiseul Port - Madagascar, E. | 131 |
| Chones Mountain, Persia, S. - - | 252 |
| †Choul Harbour - Malabar C. - - | 303 |
| Choul Highland, Ditto Ditto - | 303 |
| *Christmas Harbour, Kerguelens, I. | 90 |
| *Christmas I., - Indian Ocean - | 108 |
| Christians River Africa, E. - - | 182 |
| *Christian Vogels River, Ditto - | 180 |
| *Christopher's St. I., Mozambique, C. | 160 |
| Chubdah I. & Point, Basra, R. | 268, 269 |
| *Chulawan, I. - Africa, E. - - | 186 |
| *Churbar Bay & Town, Persia, S. - | 251 |

| | Page. |
|---|---|
| Church Rock, - Goughs I. - - | 70 |
| Churinga Bay, - Orixa - - - | 400 |
| Churinga River, - Ditto - - - | 399 |
| Churna I., - - Scindy - - - | 248 |
| Circars, - - - Coromandel - | 394 |
| *Circumcision I., - Southern Ocean | 89 |
| Clapenburg Cove, Trincomale Bay | 370 |
| Clapenburg I., - Ditto - - - | 369 |
| Claps I., - - - Java S. - - - | 113 |
| Clarke's I., - - Banks Strait - | 96 |
| Clive's Shoals, - Sea of Suez - | 226 |
| †Cloates I., - - Indian Ocean - | 99 |
| Cobra I., - - - Rio Janeiro - | 57 |
| Cocoacheira Point, Ceylon W. - | 355 |
| *Cochin - - - Malabar - - - | 316 |
| *Cock I., - - - Persian Gulf - | 264 |
| Cocklay River, - Ceylon, E. - - | 373 |
| Cocoa-nut Tree, Point Mohilla I. - | 169 |
| Coco I., Bengal Bay | 427, 431, 434, 435 |
| *Cocos I., - - - Indian Ocean - | 108 |
| †Codjee Deep, - Bengal - - - | 415 |
| Coelat Highland, Persia, S. - - | 252 |
| Coenacker Bay, - Ceylon W., - - | 360 |
| *Coetivy I., - - Indian Ocean - | 142 |
| *Coffin I., - - - Madagas., W. | 156, 160 |
| Cojong Bay and Point, Orixa | 397, 407 |
| †Colabah, - - - Bombay Harbour | 291 |
| Colab Point, - - Persia, S. - - | 251 |
| Colebrook Rock, Cape Good Hope | 77 |
| Coleche, - - - Malabar - - - | 319 |
| †Coleroon R. and Shoal, Coromandel | 382 |
| Coleroon Wood, - Ditto - - | 382 |
| *Collomandous Atoll, Maldivas - - | 338 |
| *Collomandous Ch., Ditto - - - | 338 |
| *Colombo, - - - Ceylon, W. - - | 354 |
| Colone Shoals, - Red Sea - - | 221 |
| Colter, - - - Malabar, C. - | 304 |
| Colunchery, R. - Coromandel - | 382 |
| Comodo, I. - - Sapy Strait - - | 110 |
| *Comorin Cape, Malabar | 175, 302, 320, 321 |
| *Comoro I., Moz. Ch. - | 167, 172, 173 |
| Comrah Bay, - Malabar, C. - - | 303 |
| Conar R. & Point, Coromandel - | 395 |
| †Conara Rocks, - Ditto - - - - | 395 |
| Concan, - - - Hindoostan - - | 303 |
| †Coney I., - - - Africa, W. - - | 73 |
| *Congoon Bay & Town, Persian Gulf | 263 |
| †Congo River, - Africa, W. - - | 49 |
| Conjimeer, - - Coromandel - | 384 |
| Coopers I., - - Mauritius - - | 125 |
| †Coora Ryka, - - Madagascar, W. | 156 |
| †Coral Bank, - - Indian Ocean - | 147 |
| *Coral Banks, - Red Sea - - | 218 |
| Coral Shoal, - - Persian Gulf - | 261 |
| Coriallee, - - - Africa, E. - - | 199 |
| †Coringa, - - - Coromandel - | 393 |
| Coromandel C., Hin. | 380, 422, 425, 432 |
| Corridor, - - - Lisbon Bar - - | 5 |
| *Corrientes Cape, Africa, E. - - | 185 |
| Corunna, - - - Spain - - - | 3 |
| *Cosmoledo I., - Indian Ocean - | 136 |
| Cossumba Grove, Hindoostan W. | 279 |
| Cotapatam, - - Coromandel - | 389 |
| Cotiar River, - Ceylon, E. - - | 369 |
| Cotta Point & Reef, Malabar - - | 314 |
| †Coulaba I., - - Ditto - - - | 303 |
| *Courutee I., - - Laccadivas - - | 325 |
| Covelong, - - Coromandel - | 384 |
| Cow I., - - - Ceylon, N. - - | 377 |
| Coxes I., - - - Hoogly, R. - - | 404 |
| †Crab I, - - - Madagascar, W. | 158 |
| Crab I., - - - Red Sea - - | 210 |

| | Page. |
|---|---|
| Craggy I., - - Bass' Strait - - | 95 |
| Craggy Mountain, Africa S. | 180, 181, 182 |
| *Craggy Peak, - Africa - - - | 192 |
| Crahul, - - - Malabar - - - | 317 |
| Cranganore River, Malabar - - | 316 |
| *Crescent Shoal, - Persian Gulf | 263, 271 |
| Crocodile Rock, - Bass' Strait - | 94 |
| Crocodile Rock, Malabar - | 319, 320 |
| Croix St. I., - - Africa S. - | 179, 180 |
| *Crooked R. & B., Ditto - - - - | 178 |
| Cross Hill, - - Ascension I. - | 32 |
| Cross I., - - - Bombay H. | 292, 299 |
| †Crotchey, - - - Scindy - - - | 247 |
| Crown Sand, - Africa, E. - - | 188 |
| †Crozets I., - - Southern Ocean | 90 |
| Cruz Santa Point, Rio Janeiro - | 56, 57 |
| †Cuama I., - - - Africa, E. - - | 198 |
| †Cuama River, - Ditto - - | 186, 187 |
| *Cuddalore, - - Coromandel - | 383 |
| Cudjerah, - - Persia, S. - - | 249 |
| *Cugnali I., - - Malabar - - - | 314 |
| †Cundapore River, Ditto - - - - | 312 |
| *Curia Muria I., - Arabia S. - - | 238 |
| *Curieuse I., - - Seychelles - - | 140 |
| Cutanduba I., - Rio Janeiro - | 56 |
| Cutcheree Tree, - Cambay Gulf - | 282 |
| Cutch Gulf, - - Guzarat - - - | 247 |
| Cuttack River, - Orixa - - - | 397 |

D

| | |
|---|---|
| *Dædalus Shoal, - Africa, E. - - | 198 |
| Dædalus Shoal, - Red Sea - - | 224 |
| Dagom, - - - Cambay Gulf - | 283 |
| *Dalrymple's Bay, Madagascar - | 157 |
| *Dalrymple's Head, Bouvets I. - - | 89 |
| †Damisetto Rock, Arabia, E. - - | 243 |
| *Dampier's Shoal, Timor Sea - - | 102 |
| †Danger I., - - Indian Ocean - | 148 |
| Danno River, - Hindoostan, W. | 278 |
| Darah River, - Scindy - - - | 247 |
| Dartmouth River, Madagascar - - | 154 |
| †Dassen I., - - Africa S - | 68, 73 |
| Date Tree Grove, Arabia W. - - | 211 |
| Date Trees, - - Juddah - - - | 221 |
| *Dauphin Fort, - Madagascar E. | 128 |
| Dauphin Fort Winds, Ditto - - | 128 |
| David St. Fort, - Coromandel - | 383 |
| †Deba Bay and Point, Arabia, E. - | 244 |
| Decan Shabazpour I., Bengal - - | 421 |
| Declab, - - - Malabar - - | 313 |
| Deep Water Point, Basra River - | 268 |
| Deer Point, - - Bengal - - - | 420 |
| †Delam, - - - Persian Gulf - | 267 |
| Delft I., - - - Ceylon, E. - - | 377 |
| *Delgado Cape, - Africa, S. - | 177, 178 |
| *Delgado Cape, - Africa, E. - - | 193 |
| *Delgado C. *North*, Ditto - - - | 200 |
| *Delgado R. & Bay, Ditto - - | 183, 184 |
| †Demaun, - - - Hindoostan, W. | 278 |
| †Denis I., - - - Seychelles - - | 140 |
| Dennis Bay, - - Red Sea - - | 216 |
| *Dennis St., - - Bourbon - - | 127 |
| Deravee Battery, Hindoostan, W. | 277 |
| Deriabi I., - - Arabia S., - - - | 238 |
| †Deriah Bahauder Ghur, Malabar - | 312 |
| Deseada Cape, - Africa, S. - - | 71 |
| Desertas I., - - Madeiras - - | 6 |
| Desmelondon I., Africa, E. - - | 193 |
| Desolation, I. - Southern Ocean | 90 |
| Devicotta, - - Coromandel - | 382 |
| †Devils Gap, - - Arabia, E. - - | 241 |

| | | Page. |
|---|---|---|
| Devils Mount, | Africa, S. | 73 |
| Devils Point, | Africa, E. | 192 |
| Devils Tower, | Bass' Strait | 94 |
| Devipatam, | Hindoostan, S. | 377 |
| †Dewghur Harbour, | Malabar | 306 |
| *Dhalac I., | Red Sea | 213 |
| Diamond I., | Roderigue | 123 |
| Diamond Point, | Sumatra, N. | 432, 435 |
| Dianas Peak, | St. Helena | 34 |
| Dickwell, | Ceylon, S. | 360 |
| *Diego Alvarez I., | Atlantic, S. | 70 |
| *Diego Garcia I., | Indian Oc. | 144, 433 |
| *Digby Cape, | Kerguelen's I. | 90 |
| *Dilly Mount, | Malabar | 313 |
| Diomede Rock, | Ceylon, E. | 372 |
| *Dirck Vries Bay, | Java, S. | 112 |
| †Dirk Hartags I., | New Holland | 99 |
| †Direction Bank, | Malabar, C. | 300, 304 |
| Direction I., | Red Sea | 214 |
| *Diu, | Guzarat | 275, 285 |
| Divelan, | Coromandel | 389 |
| *Divy Point, | Ditto | 391 |
| †Doara River, | Africa, E. | 200 |
| *Doddington Rock, | Africa, S. | 181 |
| *Dofar, | Arabia, S. | 237 |
| Dohul I., | Red Sea | 214 |
| Dolphin Reef, | Bombay Harbour | 295 |
| Dolphins Head, | Malabar | 315 |
| *Dolphins Nose, | Socotra I. | 202 |
| Dolphins Nose, | Coromandel | 394 |
| Domrah River, | Orixa | 399 |
| Domus, | Surat River | 280 |
| Donda, | Cambay Gulf | 282 |
| *Dondre Head, | Ceylon, S. | 359 |
| Donmanic I., | Bengal | 421 |
| *Dooharab I., | Red Sea | 218 |
| Dorah Grove, | Basra River | 268 |
| *Doubtful Shoals, | Indian Ocean | 88 |
| †Dsjerd Cape, | Persian Gulf | 259 |
| Dsjesirot Umrah, | Ditto | 270 |
| Dunnana, | Africa, E. | 199 |
| Duraja I., | Socotra | 203 |
| Duram Highland, | Persia, S. | 250 |
| †Duraspatam, | Coromandel | 389 |
| Durga, | Arabia, S. | 237 |
| Durmapatam, Point | Malabar | 314 |

E.

| | | |
|---|---|---|
| *Eagle I., | Seychelles | 141 |
| †Eagle Is., | Chagos Archip. | 148 |
| *East Cape, | Madagas, E. | 121, 132 |
| East Cape Bay, | Ditto | 132 |
| †East Cape, | Hindoostan, S. | 322 |
| †Eastern Brace, | Hoogly River | 401, 403 |
| *Eastern Sea Reef, | Ditto | 403, 435 |
| East I., | Albadra Is. | 137, 138 |
| East I., | Diego Garcia | 145 |
| East Shab., | Sea of Suez | 228 |
| Eclipse Is., | King George's Sd | 93 |
| *Egmont Is., | Chagos Archip. | 148 |
| Eight Brothers, | Red Sea Entrance | 210 |
| *Eight Degrees' Chan., | Laccad. | 175, 328 |
| Elephanta I., | Bombay Harbour | 291 |
| Elephant Hill, | Ceylon, E. | 360, 361 |
| Elephant I., | Africa, E. | 183 |
| Elephant I. & Fort Point, | Ceylon, E. | 369 |
| Elephant Rock, | Ceylon, W. | 357 |
| *Elicalpeni Bank, | Laccadivas | 302, 326 |
| *Elizabeth Bay, | Africa, W. | 50 |
| Elizabeth Point, | Ceylon, E. | 371 |
| *Eliza Shoals, | Red Sea | 220, 222 |
| Elmas Mount, | Africa, E. | 206 |
| Emaxados I., | Rio Janeiro | 57 |
| *Embude Trees, | Rio de la Plata | 65, 66 |
| Emerald I., | Red Sea | 223 |
| Emir, | Ditto | 216 |
| Enciam I., | Malabar | 319 |
| Enderghur Fort, | Hindoostan | 278 |
| Engano I., | Near Java Head | 114 |
| †English Bank, | Rio de la Plata | 61, 63 |
| *English River, | Africa, E. | 183, 184 |
| English Road, | Cape Verd Is. | 13 |
| Enkhuysen I., | Ceylon, N. | 377 |
| †Ennore, | Coromandel | 388 |
| Ensenada, | Rio de la Plata | 66 |
| *Equatorial Chan., | Maldivas | 128, 342 |
| Equatorial Cur., | Atlantic Ocean | 27 |
| Erasmus Mount, | Ceylon, E. | 372 |
| Espirito Santa, | Brazil | 55 |
| Estellas Portugal, | Portugal | 4 |
| *Euphrates River, | Persia | 267, 268 |
| *Europa Rocks, | Mozamb. Chan. | 165 |

F.

| | | |
|---|---|---|
| Fahel I., | Arabia, E. | 242 |
| Fair I. & Haven, | Sea of Suez | 226 |
| Fairlie Rock, | Ceylon, E. | 372 |
| Fairway, | Hoogly River | 403, 405 |
| Falcon Reef, | Porto Santo | 6 |
| False Bay, | Cape of Good Hope | 77 |
| False Bay, | Orixa | 398, 399, 408 |
| False Cape, | Africa, S. | 77 |
| False Cape, | Ditto | 179 |
| False Cape, | Malabar | 309 |
| False Hood, | Ceylon, E. | 366 |
| False Point Divy, | Coromandel | 390 |
| *False Pt. Palmiras | Orixa | 398, 407, 437 |
| False Port, | Madagascar | 132 |
| False River, | Surat Bar | 279 |
| *Fartash Cape, | Arabia, S. | 237 |
| Felicite I., | Seychelles | 140 |
| *Felix Cape, | Africa, E. | 204 |
| † Felix St. Point, | Madagascar | 158 |
| *Feludsh I. & Town, | Persian Gulf | 272 |
| *Fernando Noronha I., | Atlant. Oc. | 28, 52 |
| Fernando P. I. | Gulf of Guinea | 47 |
| Fernando Velosa | R., Africa, E. | 191 |
| Ferro I., | Canaries | 10 |
| Ferrol, | Spain | 3 |
| † Fillam Rock, | Arabia, E. | 244 |
| *Finisterre Cape, | Spain | 1 |
| † Firebrass Shoal, | Africa, E. | 189 |
| *Fire I., | Ditto | 188 |
| † First I., | Madagascar, W. | 158 |
| † Fish Bay, | Africa, W. | 50 |
| † Fisher's Point, | Africa, E. | 183 |
| Fisher's Rock, | Arabia, E. | 242 |
| Fish-hook Bay, | Africa, S. | 78 |
| † 5 Degrees' Chan., | Maldivas | 332 to 334 |
| *Flagstaff Point, | Ceylon, E. | 368, 371, 378 |
| Flagstaff Shoal, | Bombay Harbour | 295 |
| Flat I., | Mauritius | 124 |
| *Flat I., | Seychelles | 141 |
| *Flat I., | Africa, E | 188 |
| Flat Mountain, | Africa, S. | 178 |
| † Flesh Bay, | Ditto | 176 |
| Flores I., | Rio de la Plata | 62, 63 |
| Flores Ssrait, | Timor Sea | 109 |
| *Fogo I., | Africa, E. | 188 |
| Formosa Bay, | Brazil | 55 |
| *Formosa Bay, | Africa, E. | 197 |
| *Formosa Cape, | Gulf of Guinea | 47 |
| † Formosa Mount, | Malabar | 313 |
| Fort Dauphin Winds, | Madagas., S. | 121 |
| Fort George, | Bombay Harbour | 292 |
| Fortaventura I., | Canaries | 10 |
| Fortification I., | Bass' Strait | 94 |
| Fortified I., | Aden Road | 208 |
| † Fortified I., | Malabar C. | 311 |
| *Fortune Bank, | Indian Ocean | 142 |
| *Foul Bay, | Red Sea | 223 |
| *Foul Point, | Madagas., E. | 129, 130 |
| † Foul Point, | Sea of Sucz | 229 |
| Foul Point, | Ceylon, E. | 368 |
| Fountain of Moses, | Sea of Suez | 229 |
| Four Anchors Shoal, | Red Sea | 214 |
| Fourteen Feet Shoal, | Ditto | 221 |
| † Francisco St., | Brazil | 58 |
| † Francisco St. Reefs, | Ditto | 53 |
| *Fracis St. Bay, | Africa, S. | 178 |
| Francis St. I., | Seychelles | 141 |
| *Francois Cape, | Kerguelen's I. | 90 |
| Frederick Fort, | Africa, S. | 181 |
| Fregates I., | Seychelles | 140 |
| † French Flat, | Hoogly River | 405 |
| French I., | Africa, E. | 195 |
| French River, | Ditto | 185 |
| Fresh Water R., | Zanzibar I. | 194 |
| Friar's Hood, | Ceylon, E. | 366 |
| *Frio Cape | Brazil | 51, 55, 57 |
| Fuego I., | Cape Verds | 12, 16 |
| Fumos Cape | Africa, E. | 183 |
| *Funchal, | Madeira | 7, 8 |
| Funnel Hill, | Bombay Harbour | 293 |
| Furneaux's Is., | Bass' Strait | 95 |
| Furno Port, | Cape Verds | 16 |
| Fusht, | Persian Gulf | 270 |

G.

| | | |
|---|---|---|
| Gabon River, | Africa, W. | 48 |
| *Gadavery River, | Coromandel | 392 |
| Gaelics Bay, | Ceylon, S. | 360 |
| † Gafor I., | Maldivas | 331, 334 |
| *Galega I., | Indian Ocean | 135 |
| Galketin Bay, | Ceylon, W. | 355 |
| *Galle-Point de, | Ceylon, S. | 357 |
| † Gambroon, | Persian Gulf | 256 |
| Ganges River, | Bengal | 421 |
| *Ganjam, | Coromandel | 396, 407 |
| † Gap I., | Persian Gulf | 255 |
| Garoupas Road, | Brazil | 58 |
| † Garrow I., | Persian Gulf | 272 |
| † Gasper Sand, | Hoogly River | 402, 403 |
| Gebel Macour I., | Red Sea | 223 |
| Gebel Morah Point, | Ditto | 212 |
| † Gebel Siberget I., | Ditto | 224 |
| *Gebel Tor I., | Ditto | 218 |
| *Gebel Zebayr I., | Ditto | 217 |
| *Gebel Zeghir I., | Ditto | 217 |
| Gedam Highland | Ditto | 213 |
| *George Cape, | Kerguelen's I. | 90 |
| George St. Bay, | Cape Verds | 16 |
| *George St. Fort, | Coromandel | 385 to 387 |
| George St. I., | Mozambique | 190 |
| †George St. Is., | Malabar | 306, 309 |
| *Geriah, | Ditto | 305 |
| †Gezira, | Africa, E. | 199 |
| †Ghesan, | Red Sea | 216 |
| *Gigat Point, | Guzarat | 275 |
| Gindure Rock, | Ceylon, W. | 356 |
| Gibbet I., | Point de Galle | 357 |
| Gingerah I., | Malabar C. | 303 |
| †Glorious Is., | Madagascar Sea | 136 |

| | | Page. |
|---|---|---|
| Goa, | Malabar C. | 309 |
| *Goa Bay, | Ditto | 307 |
| †Goapnat Bank, | Cambay Gulf | 282 |
| Goapnat Point, | Guzarat | 274 |
| Godeim, | Persia, S. | 251 |
| †Gogo, | Cambay Gulf | 283,284 |
| †Goidu Atoll, | Mald. 332 to 334, | 336 |
| Golconda, | Hindoostan, E. | 390 |
| Gold Down's R., | Africa, E. | 183 |
| Gold River, | Ditto | 185 |
| Gomancy Pagoda, | Ditto | 197 |
| Gomera I., | Canaries | 10 |
| †Gondegam, | Coromandel | 389 |
| Gonga River, | Ditto | 397 |
| Gongo Sagor, | Hoogly River | 404 |
| Gongway, | Cambay Gulf | 283 |
| *Good Hope Cape, | Africa, S. | 71, 77 |
| Goofs, | Red Sea | 216 |
| Goolwaller Sand, | Cambay Gulf | 282 |
| *Gordeware Point, | Coromandel | 392,431 |
| Goritte I., | Rio de la Plata | 62 |
| *Gough's I., | Atlantic, S. | 70 |
| *Govind River, | Africa, E. | 198 |
| *Graen, | Persian Gulf | 272 |
| Grand Canary, | Atlantic, N. | 10 |
| †Grande I., | Brazil | 57 |
| Grant Point, | Bass' Strait | 96 |
| Gratiosa I., | Canaries | 11 |
| †Great Arroe, | Red Sea | 217 |
| Great Brack R., | Africa, S. | 177 |
| *Great Fish River, | Ditto | 182 |
| Great I., | Trincomale | 369 |
| Great River, | Mauritius | 125 |
| Green Hill, | Viragapatam | 395 |
| Green I., | Tellicherry Road | 314 |
| Green Point, | Table Bay | 74 |
| Grenadier's Cap, | Africa, S. | 178 |
| Grouais I., | France | 2 |
| †Grove I., | Red Sea | 223 |
| Grummet Rock, | Trincomale | 369 |
| *Guadel Ca. & Bay, | Persia, S. | 250 |
| *Guardafui Cape, | Africa, E. 201,232, | 434 |
| Gua Suba River, | Bengal | 418 |
| *Guicu, | Africa, E. | 197,198 |
| Guinea Gulf, | Africa, W. | 46 |
| Gull I., | Bombay Har. | 293 |
| Gull Rock, | Point de Galle | 357 |
| Gundavee River, | Hindoostan, W. | 279 |
| Gunner's Quoin, | Africa, S. | 81 |
| Gunner's Quoin, | Mauritius | 124 |
| Gunnoah Bay, | Persian Gulf | 267 |
| Gutter Bay, | Persia, S. | 250 |
| *Gwadur Cape, | Ditto | 250 |
| Guzerat, | Hindoostan | 274 |

H.

| | | |
|---|---|---|
| †Habesh Port, | Red Sea | 223 |
| Haffar River, | Persian Gulf 267, | 269 |
| *Hafoon, | Africa, E. | 201 |
| Halabi I., | Arabia, S. | 238 |
| *Halela Hill, | Persian Gulf | 265 |
| Hali, | Red Sea | 216 |
| *Halki I., | Arabia, S. | 238 |
| †Hamenhiel Fort, | Ceylon, N. | 377 |
| †Hammam Point, | Sea of Suez | 229 |
| *Hammee Badgeree, | Arabia, S. | 237 |
| Hanglip Cape, | Africa, S. | 77 |
| Harbinger's Reefs, | Bass' Strait | 94 |
| Harbour Shoal, | Juddah Harbour | 221 |
| *Harcourt's Bank, | Indian Ocean | 100 |
| †Hargiah Ca. & Bay, | Arabia, S. | 236 |
| †Harrarat I., | Red Sea | 213 |
| Harribanga River, | Bengal | 418 |
| Harrissa Hill, | Malabar C. | 304 |
| Hat's Rocks, | Brazil | 55 |
| Hattia I., | Bengal | 421 |
| Hawar, | Arabia, S. | 235 |
| †Haycock | Ceylon, S. | 358 |
| Haycock Rock | Red Sea | 217 |
| †Hazeni I., | Ditto | 222 |
| *Head of the Isles, | Maldivas | 329 |
| Hedic I., | France | 2 |
| *Helena St. Bay, | Africa, W. | 71 |
| *Helena St. I., | Atlantic Ocean | 33 |
| Helena St. Pass., | Ditto | 44 |
| Henery I., | Bombay Harbour | 291 |
| Heroine Reef, | Bengal C. | 419 |
| Hicks's Bason, | Ditto | 415 |
| High Peak, | St Helena | 34 |
| *Hill Cape, | Persian Gulf | 255 |
| *Hinderabia I., | Ditto | 262 |
| *Hindjam I., | Ditto | 257 |
| Hinglah Rocks, | Persia, S. | 249 |
| Hodeida, | Red Sea | 216 |
| Hoetjes Bay, | Africa, W. | 71, 72 |
| Hogan's Group, | Bass' Strait | 94 |
| Hog I., | Malabar C. | 311 |
| Holders Point, | Africa, S. | 177 |
| *Hogly I., | Africa, E. | 186 |
| Hoogly River, | Bengal | 401,430 |
| *Hooringottah R., | Ditto | 419 |
| †Hope I., | Coromandel | 392 |
| *Hormuz I., | Persian Gulf | 256 |
| Hossefin, | Arabia, E. | 244 |
| Hottentot's Point, | Africa, S. | 77 |
| Hout Bay, | Ditto | 75 |
| †Houtman's Abrolhos, | New Holland | 98 |
| †Howakil Bay & Is., | Red Sea | 212 |
| Howe Cape, | Bass' Strait | 96 |
| Howee Teeree, | Red Sea | 215 |
| Howe's Channel, | Bengal | 415 |
| Hummocks of Mombas, | Africa, E. | 196 |
| Hunter's Is., | Bass' Strait | 94, 96 |
| Hurtow Point, | Abyssinia | 213 |
| Hurtow S. E. Point, | Ditto | 212 |
| †Hyder Mount, | Malabar C. | 312 |

I.

| | | |
|---|---|---|
| †Ibrahim Cape, | Red Sea | 216 |
| Ice Is., | Southern Ocean | 89 |
| Ignacia I., | Malabar C. | 308 |
| Ilha Grande, | Brazil | 57 |
| *Imperieuse Shoal, | Southern Ocean | 101 |
| *Inaccessible I., | Atlantic, S. | 70 |
| India Coast, | Hindoostan | 276 |
| India Cove, | Africa, E. | 187 |
| Indian Point, | Africa, W. | 48 |
| *Indio del Point, | Rio de la Plata 60, 64, | 65 |
| Indujo Bank, | Africa, E. | 191 |
| *Indus River, | Scindy C. | 247 |
| *Infanta Cape & River, | Africa, S. | 176 |
| *Infanta River, | Africa, E. | 83, 182 |
| *Inhambau, | Ditto | 185 |
| Inhampura River, | Ditto | 185 |
| Inhancato I., | Ditto | 186, 187 |
| Inland Bay, | Java, S. | 112 |
| Inner Gate, | Juddah Harbour | 221 |
| Inside Channel, | Hoogly River | 404 |
| Intrepid's Rock, | Ceylon, E. | 367 |
| Invisible Bank, | Bengal Bay | 431 |
| Inyacke Point, | Africa, E. | 183 |
| *Isle of France, | Indian Ocean | 124 |
| *Isolette Cape, | Arabia, S. | 239 |
| *Israel Cape, | Red Sea | 216, 218 |
| Itapere Point & Rock, | Madagascar | 129 |
| Ivat I., | Zeyla Bay | 206 |
| †Iviker River, | Malabar | 317 |

J.

| | | |
|---|---|---|
| Jacobs Ladder, | Tagus River | 5 |
| †Jafanapatam, | Ceylon, N. | 377 |
| *Jaffatine I., | Red Sea | 225 |
| †Jaffrabad, | Guzarat | 274 |
| *Jaggernaut Pagodas Orixa | | 396, 407 |
| †Jaggernautporam, | Coromandel C. | 393 |
| *Jago St. I., | Cape Verds | 14, 15 |
| Jago St. I. & Bank, | Africa, E. | 189, 190 |
| Jago St. Point, | Rio de la Plata | 66 |
| *James's Town, | St. Helena | 37 |
| *Jask Bay & Cape, | Persia, S. | 252, 254 |
| Jaunmair Fort, | Guzarat | 274 |
| *Java Head, | Java I. | 113 |
| *Java S. E. Point, | Ditto | 111 |
| *Java South Coast | Ditto | 111 |
| †Jedee Cape, | Persian Gulf | 270 |
| *Jeendana I., | Timor Sea | 109 |
| †Jehan Cape, | Sea of Suez | 229 |
| Jerkamutty River, | Persia, S | 249 |
| Jervis Cape, | Terra Australis | 94 |
| *Johanna I., | Mozam. Ch. | 169, 170 |
| *John de Nova I., | Ditto | 137, 159, 164 |
| *John de Nova Is., | Indian Ocean | 136 |
| John St. Fort, | Rio Janeiro | 56 |
| John St. Foul Ground, | Hind., W. | 276, 278 |
| *John St. High Land | Ditto | 278 |
| *John St. I., | Red Sea | 223 |
| John St. River, | Africa, E. | 182 |
| *Joob River, | Ditto | 198 |
| †Jubal I., | Sea of Suez | 226 |
| Jubaroon Point, | Cape Verds | 15 |
| *Juba Town, | Africa, E. | 198 |
| Jubunah River, | Bengal | 418 |
| †Juddah Shoals, | Red Sea | 222 |
| *Juddah Town & Har. | Arabia W. | 220 |
| Judgment Rock, | Bass' Strait | 95 |
| *Juggat Point, | Guzarat | 275 |
| Julian St. Fort, | Tagus River | 4 |
| Julius Nave, | Ceylon E. | 361, 365 |
| †Jumbasseer Road, | Cambay Gulf | 282 |
| Junkseylon, | Bengal Bay | 425, 434 |
| Jutten I., | Saldanha Bay | 71 |

K.

| | | |
|---|---|---|
| *Kaez I., | Persian Gulf | 261 |
| Kalhat, | Arabia, E. | 241 |
| Kalitore, | Coromandel | 389 |
| *Kalpeni I., | Laccadivas | 327 |
| Kanary Flat, | Bombay Harbour | 297 |
| †Kanary I., | Ditto | 291, 434 |
| *Kanguroo I., | Terra Australis | 94 |
| Kannaka Bay, | Orixa | 407 |
| Kannaka River, | Ditto | 399 |
| *Karak I., | Persian Gulf | 266 |
| Karical River, | Coromandel | 381 |
| Karud I. & Town | Persian Gulf | 271 |
| *Katif Bay, | Ditto | 271 |
| Keddree I., | Africa, E. | 196 |
| Kedgree & Sand | Hoogly River | 402 |
| *Keiskamma River, | Africa, E. | 182 |
| Kell, | Hoogly River | 401, 405 |
| Kelsals Channel, | Ceylon, N. | 376 |
| Kelsey, | Malabar C. | 304 |

| | | Page. |
|---|---|---|
| Kenn Hummocks, | Persian Gulf | 264 |
| *Kents Groups, | Bass' Strait | 95, 96 |
| †Kerazee Cape, | Persian Gulf | 254 |
| *Kerguelen's I., | Southern Ocean | 90 |
| Kettle Bottom | Ceylon, E. | 366 |
| Kettle Bottom | Coromandel | 388 |
| *Keyn I., | Persian Gulf | 264 |
| †Khubber I., | Ditto | 272 |
| †Kiama I., | Africa, E. | 198 |
| Killock High Land | Persia, S. | 252 |
| *King George's Sound | Terra Australis | 93 |
| *King's I., | Bass' Strait | 94, 96 |
| *King's I., | Maldivas | 334 |
| King's I., | Bengal | 415 |
| King's Town, | Mohilla I. | 169 |
| *Kishm I. & Town, | Persian Gulf | 256, 257 |
| *Kishm S.W. Point | Kishm I. | 258 |
| Kissangula I., | Africa, E. | 191 |
| *Kisseen Point & Town | Arabia S. | 237 |
| Kistnapatam, | Coromandel | 389 |
| Kistna River, | Ditto | 390, 392 |
| *Kittan I., | Laccadivas | 325 |
| Knysna River, | Africa, S. | 177 |
| *Kohumbarek Rock | Persia, S. | 254 |
| †Kohumbarek Shoal, | Ditto | 254 |
| †Kolram River, | Coromandel | 382 |
| *Konkun Bay & Town, | Persian Gulf | 263 |
| †Korauchee, | Scindy C. | 247 |
| Korgo I., | Persian Gulf | 266 |
| Koor Abdillah, | Basra River | 267, 272 |
| Koor Boobian, | Ditto | 268, 272 |
| Koor Gufgah, | Ditto | 267 |
| *Koor Hussan, | Persian Gulf | 271 |
| *Koseir, | Red Sea | 224 |
| †Kotumbul I., | Ditto | 216 |
| †Kringetty I., | Africa, E. | 198 |
| †Kurfaken Cove, | Arabia, E. | 244 |
| †Kuriat Cape, | Ditto | 241 |
| Kuriat Town, | Ditto | 242 |
| †Kurrum Sheik | Africa, E. | 206 |
| *Kyen I. | Persian Gulf | 261 |


## L


| | | |
|---|---|---|
| †Lacam's Channel, | Hoogly River | 404, 414 |
| †Laccadiva Is., | Indian Ocean | 322, 434 |
| Ladder Hill, | St. Helena I., | 35 |
| La Digue I., | Seychelles | 140 |
| *Lahry Bunder R., | Scindy C. | 247 |
| *Lakorgee I., | Africa, E. | 205 |
| Landfall I., | Andamans | 431 |
| Landfall Point | Bengal | 419 |
| Landu I., | Maldivas | 330 |
| Lanzarote I., | Canaries | 11 |
| Lara Point, | Rio de la Plata | 66 |
| *Laredsh, I. | Persian Gulf | 256 |
| Laree Point, | Madagascar, E. | 131 |
| *Larek I., | Persian Gulf | 256 |
| †Latham's Shoal, | Africa, E. | 174 |
| Lavardin Shoal, | France | 2 |
| †Lawrence St. I., | Indian Ocean | 136 |
| *Lazarus St. Bank, | Comoro Is. | 172 |
| Le Colombier I., | Mauritius | 124 |
| *Ledo Cape, | Brazil | 51, 52 & 53 |
| *Leeuwin Cape, | Terra Austr. | 93, 97, 98 |
| †Leopards Reef, | Africa, E. | 197 |
| *Leton Rock & Bank | Cape Verds | 13 |
| †Lighthouse, | Bombay Harbour | 291 |
| Lighthouse Point, | Bengal | 404, 414 |
| Lightning Is., | Red Sea | 214 |
| *Lincoln Port, | Terra Australis | 93 |
| Lindy River, | Africa, E. | 193 |
| †Linga, | Persian Gulf | 259 |
| Lion's Head, | Table Bay | 73, 76 |
| Lion's Rump, | Ditto | 73, 76 |
| Liptrap Cape, | Terra Australis | 96 |
| *Lisbon, | Portugal | 5 |
| Lisbon Bar, | Tagus River | 5 |
| *Lisbon Rock, | Portugal | 4 |
| Little Fish Bay, | Africa, W. | 49 |
| Little I., | Trincomale | 369 |
| Lively Rocks, | Ceylon, E. | 372 |
| *Lizard Point, | England | 1 |
| †Loando de St. Paul | Africa, W. | 49 |
| *Loango Bay, | Ditto | 48 |
| *Lobos I., | Rio de la Plata | 60, 61 |
| Locmaria Point, | France | 2 |
| *Loheia, | Red Sea | 216 |
| Lokinsin Point, | Madagascar, E. | 131 |
| *Lombock Strait, | Lombock I. | 110 |
| London's Bank, | Coromandel | 389 |
| Long Beach | Terra Australis | 96 |
| Long I., | Mauritius | 124 |
| Long I., | Sea of Suez | 226 |
| Long I., | Ceylon, W. | 353 |
| †Long Point, | Madagascar | 130 |
| †Long Sand, | Hoogly River | 402 |
| Loo Rock, | Madeira I | 8 |
| *Lopez Cape, | Africa, W. | 42, 48 |
| *Lorenzo Marques Bay, | Africa, E. | 183 |
| *Louis Cape, | Kerguelens I. | 90 |
| *Louis Port, | Mauritius I. | 126 |
| †Louquez Port, | Madagascar, E. | 132 |
| *Low I., | Red Sea | 218 |
| Low Point, | Africa, E. | 204 |
| Low Point, | Arabia, S. | 239 |
| †Luabo River, | Africa, E. | 186, 187 |
| Luce St. Is., | Madagascar | 128 |
| Lucia St. I., | Cape Verds | 16 |
| Lucia St. Point, | Africa, E. | 183 |
| Lucia St. River, | Ditto | 183 |
| *Luft, | Persian Gulf | 257 |
| Luke St. Galleons | Bay Madagascar | 129 |
| Lump I., | Persian Gulf | 255 |


## M.


| | | |
|---|---|---|
| Macaloe Bay, | Africa, E. | 193 |
| Mack Shoal, | Bengal | 420 |
| *Macula Bay, | Arabia, S. | 236 |
| *Madagascar E. Coast, | Indian Ocean | 128 |
| Ditto Passage, | Ditto | 120 |
| *Ditto S. & W. Coast, | Ditto | 150 |
| *Madeira I., | Atlantic Ocean | 7 |
| *Madras | Coroman. | 385, 387, 428 |
| *Madura Coast, | Manar Gulf | 347 |
| Mafalane Movya I., | Africa, E. | 189 |
| *Mafamale I., | Ditto | 188 |
| †Mafer I., | Maldivas | 331, 334 |
| *Magadoxa, | Africa, E. | 199 |
| Magame Point, | Ceylon, E. | 365 |
| Mago Point, | Ditto, S. | 360 |
| Mahanuddy R., | Orixa | 398 |
| †Mahe Fort, | Malabar C. | 314 |
| *Mahe Is., | Indian Ocean | 140 |
| †Mails, | Red Sea | 212 |
| *Majambo Bay | Madagascar, N. | 157 |
| Majunga, | Ditto | 156 |
| Malabar C, | Hind., W. | 313, 430, 434 |
| Malabar Hill, | Bombay I. | 295, 296 |
| †Malacca Banks, | Cam. G. | 278, 280 to 282 |
| Malacca Strait, | Ben. B. | 426, 431 to 435 |
| Malah I, | Basra River | 269 |
| †Maldiva Channel, | Maldivas | 336 |
| *Maldiva I., | Ditto | 331, 334 |
| †Maldiva Is., | Indian Ocean | 328 |
| *Maldonado, | Rio de la Plata | 62 |
| Male Atoll, | Maldivas | 334 |
| Malendu I., | Ditto | 330 |
| Malgasen I., | Africa, S. | 71 |
| Maliapore, | Coromandel | 385 |
| †Malos Madou, Atoll, | Maldivas | 332 |
| Malwan, | Malabar C. | 306 |
| *Mambacool Bay, | Madagascar, N. | 157 |
| Mamelles Rocks, | Seychelles | 140 |
| Manacoudy, | Malabar C. | 320 |
| *Manapar Point, | Manar Gulf | 321, 346 |
| Manar Gulf, | Hind. | 175, 347, 349, 430 |
| †Manar I., | Manar G. | 350, 352, 377 |
| Mancabala, | Africa, E. | 191 |
| Mandra I., | Ditto | 197 |
| *Mangalore, | Malabar C. | 312 |
| †Manghabes Bay, | Madagascar, E. | 131 |
| Manice River, | Africa, E. | 184 |
| †Manikpatam, | Coromandel | 396, 407 |
| †Manivoul, | Madagascar, E. | 130 |
| Man of War's Bay, | St. Thomas I. | 48 |
| †Manourou, | Madagascar, E. | 130 |
| Mantotte Point, | Manar Gulf | 352 |
| †Manumbaugh, | Madagascar | 156 |
| Mapoota River, | Africa, E. | 184 |
| *Marabia Reefs, | Red Sea | 218 |
| Marawil, | Ceylon, W. | 353 |
| Marble Point, | Ditto, E. | 369 |
| Marca, | Africa, E. | 199 |
| Marcia Cape, | Arabia, S. | 239 |
| Marcus I., | Africa, S. | 71 |
| Mariane I., | Seychelles | 140 |
| Marice Is., | Brazil | 56 |
| *Marie Louise I., | Seychelles | 137 |
| Marine Barometer, | | 30 |
| Marmagoa, | Malabar C. | 309 |
| Marmary Shoals, | Red Sea | 220 |
| †Marosse | Madagascar, E. | 131 |
| Martha St. Lighthouse, | Lisbon Bar | 4 |
| *Martin's St. Point, | Africa, W. | 71 |
| *Martin Vas Rocks, | Atlantic Ocean | 30 |
| *Mary St. Cape, | Brazil | 60, 61, 64 |
| *Mary St Cape, | Madagascar, S. | 153 |
| *Mary St. I., | Ditto, E. | 130 |
| Mary St. I., | Africa, E. | 183 |
| †Mary St. Rocks, | Malabar, C. | 312 |
| *Mascarenhas I., | Indian Ocean | 127 |
| †Masera, | Arabia, E. | 241 |
| *Massowa, | Red Sea | 213 |
| *Masulipatam, | Coromandel | 391 |
| Matemo I., | Africa, E. | 192 |
| Mathewren Bay, | Roderigue I. | 123 |
| Matta Grossa, | Sofala | 186, 182 |
| Matual, | Ceylon, W. | 354 |
| †Matauria I., | Maldivas | 335 |
| *Matura, | Ceylon, S. | 359 |
| †Maurice Bay, | Java, S. | 112 |
| *Mauritius I., | Indian Oc. | 124 to 127 |
| Mawhone Point, | Africa, E. | 184 |
| Maya I., | Brazil | 56 |
| Mayhim Road, | Bombay | 276 |
| †May I., | Cape Verds | 13 |
| †May I., | Persian Gulf | 263 |
| *Mayotta I., | Mozamb. Chan. | 169 |
| Mazagon Fort, | Bombay I. | 295 |
| Mazagon Hill, | Bombay I. | 291 |
| Mazagon House, | Ditto | 294 |
| *Mazeira I. & Gulf, | Arabia, E. | 239 |
| Megna River, | Bengal | 421 |
| Melinda, | Africa, E. | 197 |

| | | Page. |
|---|---|---|
| †Melundy I., | Malabar C. | 306 |
| Memoria Point, | Rio de la Plata | 60 |
| Mendam's Point, | Bombay I. | 295 |
| Mender Tree, | Hindoostan, W. | 279 |
| *Mensurado Cape, | Guinea | 42, 47 |
| Meranbaye I., | Brazil | 58 |
| *Merjee River, | Malabar C. | 311 |
| Meshir, | Africa, E. | 199 |
| *Mette I., | Ditto | 205 |
| Meuvan Bank, | Persian Gulf | 267 |
| Middle Channel, | Hoogly River | 405 |
| Middle Ground, | Roderigue I | 123 |
| Middle Do. Shoal, | Bombay Harbour | 295 |
| Middle I. | Albadra Is | 138 |
| Middle I. | Diego Garcia | 145 |
| Middle Passage, | Indian Ocean | 118 |
| Middle Ridge, | Hoogly River | 403 |
| †Milla Doue Madoue, | Maldivas | 330, 331 |
| *Minicoy I., | Laccadivas | 175, 327 |
| Miusangegy R., | Africa, E. | 191 |
| Mirante, | Tagus River | 5 |
| Mirza Arakea, | Red Sea | 215 |
| †Mirza Arosse | Ditto | 215 |
| Mirza Fadjer, | Ditto | 215 |
| Mirza Durhoor, | Ditto | 215 |
| †Mirza Mumbarack | Ditto | 214 |
| Mirza Nhud, | Ditto | 216 |
| †Mirza Sheik Baroud, | Ditto | 215 |
| Missah I., | Zeyla Bay | 207 |
| Mizen Sand, | Hoogy River | 402 |
| Mocamba River, | Africa, E. | 189 |
| *Mocha, | Arabia, W. | 211 |
| †Mogincale Point & Shoal, | Africa, E. | 189 |
| †Mogoo Bay & Town, | Persian Gulf | 259 |
| *Mohila I., | Mozamb. Chan. | 168 |
| Moilan Fort, | Malabar C. | 314 |
| *Molateeva House, | Ceylon, E. | 373 |
| Molewal Shoal, | Ditto | 373 |
| †Molky Rocks & R. | Malabar C. | 312 |
| Mollinchew R., | Bengal | 418 |
| †Molucque Atoll, | Maldivas | 336, 338 |
| Moma Bank, | Africa, E. | 188 |
| *Mombas I. & Port, | Africa, E. | 196 |
| Moncoorah I., | Bengal | 421 |
| Moncurs Is. | Bass' Strait | 94 |
| *Mondego Cape, | Portugal | 4 |
| Moneroo Mount., | Java | 112 |
| †Monfia I., | Africa, E. | 194 |
| †Mongallou, | Ditto | 193 |
| Mongella I., | Persian Gulf | 264 |
| Monserrate Point, | Brazil | 54 |
| Monsoons, | Indian Seas | 114, 285 |
| Monsoorcottah R., | Coromandel | 396 |
| *Monteval Cape, | Arabia, S. | 238 |
| Monument Bay, | Mauritius | 125 |
| *Monze Cape, | Scindy C. | 248, 273 |
| *Moobaruk, | Persian Gulf | 254 |
| Moolivaram Pagodas, | Coromandel | 384 |
| †Mootapilly & Bank, | Coromandel | 390 |
| Mordeira Bay, | Cape Verds | 12 |
| *Morebat, | Arabia, S. | 237 |
| †Ditto Peak & Sugar Loafs, | Ditto | 238 |
| *Mornington Port, | Red Sea | 214 |
| *Moro Cobir Point, | Africa, E. | 200 |
| Morro St. Marta, | Brazil | 58 |
| Mosque Town, | Johanna I. | 171 |
| *Mossel Bay, | Africa, S. | 176 |
| *Mountains Cape, | Ditto | 179 |
| †Mouroundava, | Madagascar, W. | 156 |
| Mouse Back, | Africa, S. | 72 |
| Mousongo River, | Ditto, E. | 194 |
| Mowah Bay, | Guzarat | 274 |
| *Mowaree Cape, | Scindy C. | 248 |
| Movinxes Beach, | Africa, E. | 189 |
| *Mozamb. Chan., | Ditto | 150 |
| *Mozamb. Harbour, | Africa, E. | 189. 190 |
| *Ditto I. & Town, | Ditto | 190, 191 |
| †Muchamahola, | Comoro I. | 167 |
| Muchan I., | Persian Gulf | 272 |
| Muckandu I., | Maldivas | 331 |
| Mucksa Cape, | Persia, S. | 252 |
| Muddi Road, | Gulf of Cutch | 247 |
| Muddy Peak, | Persia, S. | 250 |
| Mud Point, | Hoogly River | 402 |
| Mulanimil, | Sea of Suez | 229 |
| Mull River, | Scindy C. | 247 |
| †Mulmaradam, | Persian Gulf | 271 |
| Muran, | Persia, S. | 249 |
| Murgaveen. | Ditto Gulf | 270 |
| Murjattah River, | Bengal | 418 |
| Murvah, | Hindoostan, W. | 277 |
| *Muscat, | Arabia, E. | 242 |
| Muscat I. & Cove, | Ditto | 242 |
| Mushereel River, | Mozambique | 190 |
| Mussendom Ca., | Persian Gulf | 244, 269 |
| Mutrah Harbour, | Arabia, E. | 242 |
| Mutwall River, | Bengal | 417 |
| Mypurra I., | Orixa | 398, 408 |

N.

| | | |
|---|---|---|
| *Naaman Is., | Red Sea | 222 |
| *Nabon Cape, | Persian Gulf | 263 |
| *Naggery Nose, | Coromandel | 388 |
| †Nagore Pagodas, | Ditto | 381 |
| Nakelo, | Persian Gulf | 262 |
| Nalladiva I., | Ceylon, W., | 352 |
| †Namier I., | Red Sea | 222 |
| †Namiu I., | Persian Gulf | 260 |
| *Narreenda Bay, | Madagascar, N. | 157 |
| Narrows, | Sea of Suez | 228 |
| †Narsapour, | Coromandel | 392 |
| †Nash Harbour, | Bengal | 420 |
| *Natal, | Africa, S. | 83, 182 |
| †Natal I., | Indian Ocean | 139 |
| †Natal Points 1st, 2d, & 3d, | Africa S. | 182 |
| Natar Reef, | Maldivas | 336 |
| †Nazareth Bank, | Indian Ocean | 133, 134 |
| Neat's Tongue, | Bombay Harbour, | 290 |
| Nebah Point, | Suez Bay | 230 |
| *Negapatam Fort, | Coromandel | 381 |
| Ditto Shoal, | Ditto | 380 |
| †Negombo, | Ceylon, W. | 353 |
| Negrais Cape, | Ava | 434, 435 |
| *Negro Cape, | Africa, W. | 49 |
| Nepatte I., | Madagascar, E. | 131 |
| *Nepean Bay, | Terra Australis | 94 |
| *Neuf I., | Seychelles | 142 |
| New Cavery R., | Coromandel | 382 |
| New Holland, | Southern Ocean | 98 |
| *New I., | Timor Sea | 109 |
| †Newtee, | Malabar C. | 306 |
| New Year's Is., | Bass' Strait | 94, 96 |
| Niatie Point, | Africa, E. | 193 |
| Nicholas St. I., | Cape Verds | 16 |
| Nicobar Is., | Ben. B. | 422, 427 to 435 |
| Nicomaje I., | Africa, E. | 193 |
| Niely I., | Ceylon, S. | 360 |
| Niff, | Guinea | 41 |
| *Nightingale I., | Atlantic, S. | 70 |
| Nilgur Hills, | Orixa | 400 |
| †Nillandous Atoll, | Maldivas | 336 |
| *Nine Degrees' Chan., | Lac. | 175, 233, 327 |
| Nine-Pin Rock, | Trinidad I. | 32 |
| Noa Point, | Persia, S. | 250 |
| Noah's Ark, | Africa, S. | 78 |
| †Nobfleur I., | Persian Gulf | 260 |
| *Noesa Baron I., | Java, S. | 112 |
| Northesk Rock, | Trincomale Bay | 369 |
| Northumberland C., | Terra Australis | 98 |
| *North-West Ca. | New Holland | 100, 106 |
| Norway I. & Point, | Trincomale Bay | 369 |
| *Nose Cape, | Red Sea | 223 |
| Noss Bey I., | Madagascar, N. | 157 |
| Nos. Senra. de la Cabo, | Goa Bay | 308 |
| *Nossi Ibrahim I, | Madagascar, E. | 150 |
| *Nosu Lancassee, | Ditto, N. | 157 |
| Nowa Bunder, | Guzarat | 275 |
| Nunsaree River, | Hindoostan, W. | 279 |
| Nysna River, | Africa, S. | 177 |

O

| | | |
|---|---|---|
| Oblong Woody Hill | Bombay I. | 295 |
| †Oboe I., | Africa, E. | 207 |
| *Odiaroo, | Manar Gulf | 350 |
| Ohah I., | Persian Gulf | 271, 272 |
| Oibo I., | Africa, E. | 192 |
| †Old Woman's I. | Bombay Harbour | 291 |
| Oleron I., | France | 2 |
| Olinda, | Brazil | 53 |
| Oman, | Arabia, E. | 244 |
| Omersary River, | Hindoostan W. | 279 |
| Omrah, | Surat River | 280 |
| *One & a Half Deg. Ch. | Maldivas | 175, 339 |
| Onglahe River, | Madagascar, W. | 154 |
| †Onore, | Malabar C. | 311 |
| †Onza Is., | Spain | 4 |
| Oratava, | Teneriffe I. | 10 |
| *Orfui Cape, | Africa, E. | 201, 232 |
| Orixa, | Hindoost. E. | 394, 427 |
| *Ormus I., | Persian Gulf | 256 |
| *Ortegal Cape, | Spain | 3 |
| *Ortiz Banks, Rio de la Plata | | 59, 64, 65 |
| Osnaburg Point, | Trincomale | 369 |
| *Otway Cape, | Terra Australis | 94 |
| Outer Gate, | Juddah Harbour | 221 |
| Outer Passage, | Indian Ocean | 115 |
| Overfall Point, | Persian Gulf | 257 |
| *Owen's Bank | Indian Ocean | 147, 433 |
| Oyster Harbour, | Terra Australis | 93 |
| Oyster Rock | Bombay Harbour | 293, 294 |
| *Oyster Rocks | Carwar Bay | 310 |

P

| | | |
|---|---|---|
| Pacence Cape, | Persia, S. | 249 |
| Paco d'Arcos, | Tagus River | 5 |
| *Padron Cape, | Africa, S. | 182 |
| †Padypolo Atoll | Maldivas | 331 |
| Pages, | Terra Australis | 94 |
| Pagoda Cape, | Malabar C. | 305 |
| Pagoda Hill, | Ceylon, E. | 361, 365 |
| Painted Rock, | Point de Galle | 357 |
| Palks Bay & Strait, | Ceylon, N. | 375, 376 |
| *Palma I., | Canaries, | 9 |
| *Palmas Cape, | Guinea | 41, 47 |
| *Palmiras Point, | Orixa | 398, 407, 409 |
| Palm Trees I., | Africa, E. | 188 |
| *Palmyra Point | Ceylon, N. | 373 to 376 |
| *Palur River | Malabar C. | 316 |
| Palyam, | Coromandel | 384 |
| Pananjung Bay, | Java, S. | 112 |
| Pan de Azucar, | Rio de la Plata | 62 |
| Panella Hill | Hindoostan, W. | 278, 279 |
| Panella Spit, | Ditto | 280 |

| | | Page. |
|---|---|---|
| *Paniang River, | Malabar, C. | 315 |
| Pantar Strait, | Timor Sea | 109 |
| †Panthers Shoal, | Red Sea | 210 |
| Panture, | Ceylon, W. | 354 |
| Pao Mountain, | Mozambique | 190 |
| Paps, | Persian Gulf | 265 |
| Paps, | Tagus River | 5 |
| Paps of Natte, | Madagascar, E. | 130 |
| Paps of Tull, | Bombay Harbour | 294 |
| Paracel Bank, | Africa E. | 188 |
| Paraiba River, | Brazil | 53 |
| Paravangah Is., | Bengal | 419 |
| Pardee, | Hindoostan, W. | 279 |
| Parell Hill, | Bombay I. | 291 |
| Parrazira Bay, | Brazil | 51 |
| Passage I., | Mauritius | 127 |
| *Passandava | Madagascar, N. | 157 |
| Patietan Bay, | Java, S. | 112 |
| *Patta, | Africa, E. | 197 |
| Paul St., | Bourbon I. | 127 |
| *Paul St. Cape, | Guinea | 47 |
| *Paul St. I., | Atlantic Ocean | 28 |
| *Paul St. I. | Southern Ocean | 90, 108, 113 |
| Pavilions | Mauritius | 126 |
| Paya I., | Brazil | 56 |
| Peaked Mountain | Africa, S. | 178 |
| Pearl Bank, | Manar Gulf | 349, 351 |
| Pedir Coast, | Sumatra | 435 |
| Pedro Point, | Ceylon N. | 373 |
| Pedro Village, | Ceylon, N. | 373 to 376 |
| *Pemba I., | Africa, E. | 173, 196 |
| Pemba River & Bay, | Africa, E. | 192 |
| Penguin I., | Africa, S. | 73, 75, 76 |
| †Pennar Point, | Coromandel | 389 |
| Penn River, | Bombay Harbour | 291, 293 |
| Peply River & Sand, | Hoogly R. | 400, 401 |
| Peram I., | Guzarat | 283 |
| *Peremul-par I., | Laccadivas | 324 |
| *Perim I., | Red Sea Entrance | 209 |
| †Pernambuco | Brazil | 51, 53 |
| *Peros Banhos Is., | Indian Ocean | 148 |
| Persian Gulf, | Persia | 244, 253, 430 |
| Pertuis d'Antioche, | France | 2 |
| Pesarly Rocks, | Africa, E. | 198 |
| Peter Butts, | Mauritius I, | 125 |
| †Peter St. Cape, | Africa, E. | 205 |
| †Pettahpilly | Coromandel | 390 |
| *Pherleechee I. & T., | Persian Gulf | 272 |
| †Phillip Port, | Bass' Strait | 96 |
| Phillip's I., | Ditto | 96 |
| Phillip St Bonnet, | Benguela | 49 |
| *Pico Fragos, | Africa, E. | 192 |
| Piedras Point, | Rio de la Plata | 64, 65 |
| †Pierre St. I. | Indian Ocean | 136 |
| Pigeon House, | Mauritius | 124, 126 |
| *Pigeon I., | Malabar C. | 311 |
| Pigeon I., | Point de Galle | 357 |
| Pigeon I., | Trincomale Bay, | 369 |
| †Pigeon I., | Ceylon, E. | 372 |
| Pigeon I., | Coromandel | 395 |
| Pilot I., | Bab-el maud. Ca. | 209 |
| Pilot I., | Red Sea | 213 |
| Pilots Stations, | Hoogly River | 409 |
| †Pinda Shoal & River, | Africa, E. | 191 |
| *Pittie I., | Laccadivas | 325 |
| †Pitts Bank, | Indian Ocean | 147 |
| Plata River, | America, S. | 45, 59 |
| *Platte I., | Seychelles | 141 |
| *Plettemberg Bay, | Africa, S. | 178 |
| Plumbs I., | Madagascar, E. | 129 |
| *Point de Galle, | Ceylon, S. | 302, 347, 357 |
| Point de Sol, | Madeira I. | 8 |
| †Point Pedro Shoal, | Ceylon, N. | 373, 378 |
| Polandiva I., | Ceylon, N. | 377 |
| Polanis I., | Manar Gulf | 349 |
| *Polior I., | Persian Gulf | 260, 261 |
| Polior Shoal, | Ditto | 259, 261 |
| Pombon, | Manar Gulf | 350 |
| *Pona Molubque Atoll | Mald. | 344 to 346 |
| Pondera, | Malabar C. | 318 |
| *Pondicherry, | Coromandel | 383 |
| Pondy River & Highland, | Ditto | 396, 426 |
| Pontevedro Bay, | Spain | 4 |
| Poorally River, | Persia, S. | 248 |
| †Porca, | Malabar C. | 317 |
| Porgas Bank, | Cape Verds | 11 |
| Porto Fajen Dago, | Ditto | 16 |
| Porto Furreo, | Ditto | 16 |
| Porto Grande, | Ditto | 15 |
| †Porto Nova, | Coromandel | 383 |
| *Porto Praya, | Cape Verds | 14 |
| *Porto Santo, | Madeiras | 6 |
| Portugal, | Atlantic, N. | 3 |
| Possem Bay, | Persia, S. | 251 |
| Possession I., | Africa, W. | 50 |
| †Poulisdous Atoll, | Maldivas | 336, 338 |
| †Poulisdous Chan. | Ditto | 336 |
| *Pracel Bank, | Madag., W. | 159 to 164 |
| *Praslin I., | Seychelles | 140 |
| *Premeira Is., | Africa, E. | 188 |
| Premeira Is., | Red Sea | 210 |
| †Premeira Rocks, | Malabar C. | 312 |
| Preparis I., | Bengal Bay | 427, 430, 434 |
| Preservation I., | Bass' Strait | 96 |
| *Prince Edwards Is. | Southern Ocean | 90 |
| *Prince George I., | Indian Ocean | 143 |
| *Princes I., | Gulf of Guinea | 39, 47 |
| Princess Rl. Har., | Terra Australis | 93 |
| †Prior Cape, | Spain | 3 |
| †Providence I., | Indian Ocean | 139 |
| Providien I., | Ceylon, E. | 368 |
| Puerta Cavallos, | Canaries | 11 |
| †Pulicat & Hills, | Coromandel | 388, 429 |
| Pulicat Shoal, | Ditto | 386, 388 |
| Puncah Point & River, | Bengal | 419 |
| Puncah Shoal, | Ditto | 420 |
| *Punnecoil, | Manar Gulf | 349 |
| Puspear Rock, | Hindoostan W. | 277 |
| Putnay I., | Bengal | 418 |
| Pyramid, | Bass' Strait | 95 |
| Pyramid Great, | Arabia, E. | 242 |
| Pyramid Little, | Ditto | 242 |

Q.

| | | |
|---|---|---|
| Quail I, | Cape Verds | 15 |
| Quails I., | Madagascar, E., | 131 |
| *Querimba I., | Africa, E, | 192 |
| Quifoula I., | Ditto | 193 |
| †Quilife River, | Ditto | 197 |
| *Quilimane River, | Ditto | 187 |
| *Quiloa, | Ditto | 194 |
| *Quilon & Reef, | Malabar C. | 317 |
| Quintangone Point & R., | Africa, E. | 191 |
| Quisimasugo R., | Ditto | 191 |
| Quizungo River, | Ditto | 187 |
| Quion Hill, | Persia, S. | 252 |
| †Quoins, | Persian Gulf | 255 |
| Quoin Small, | Ceylon, E. | 367 |

R.

| | | |
|---|---|---|
| †Rabuabad I., | Bengal | 421 |
| †Radjapour Fort, | Malabar C. | 305 |
| Ragamma Point, | Ceylon, W. | 355 |
| Rajapour, | Guzarat | 274 |
| †Rajapour Har., | Malabar C. | 303 |
| *Ramanpaaj, | Ceylon, S. | 361 |
| *Ramas Cape, | Malabar C. | 309 |
| *Ramen Point, | Manar Gulf | 350 |
| *Ramisseram I., | Ditto | 350 |
| †Raree, | Malabar C. | 307 |
| †Ras Ahveed, | Abyssinia | 214 |
| †Ras Badaud, | Arabia, E. | 241 |
| Ras Beloul, | Abyssinia | 212 |
| *Ras Berdistan, | Persian Gulf | 264 |
| Ras Bir, | Abyssinia | 207 |
| Raschab I., | Red Sea | 216 |
| Ras-el-alm, | Ditto | 216 |
| *Ras-el-Ans, | Abyssinia | 223 |
| †Ras-el-Gedid, | Ditto | 223 |
| *Ras-el-had, | Arabia, E. | 241, 245 |
| *Ras-el-kire, | Africa, E. | 200 |
| *Ras Feluk, | Ditto | 204 |
| †Ras Fillam, | Arabia, E. | 244 |
| Ras Firmah & Shoal, | Red Sea | 210 |
| Ras Ghesan, | Ditto | 216 |
| †Ras Goree, | Africa, E. | 205 |
| Ras Ishtye, | Abyssinia | 214 |
| †Ras Koli, | Persian Gulf | 255 |
| Ras Kurrum, | Africa, E. | 206 |
| †Ras Magamel, | Red Sea | 215 |
| *Ras Mahomed, | Ditto | 225, 227 |
| Ras Mesalle, | Sea of Suez | 229 |
| *Ras Nabend, | Persian Gulf | 263 |
| *Ras Rattah, | Abyssinia | 212 |
| *Ras Reccan, | Persian Gulf | 270 |
| Ras Rouze, | Arabia, E | 241 |
| Rasseen Hill, | Malabar, E. | 308 |
| †Ras Selima | Sea of Suez | 229 |
| †Ras Sellah Shoals, | Red Sea | 222 |
| *Ras-ul-Gebal, | Persian Gulf | 269 |
| Ras-ul-Gilla, | Ditto | 271 |
| *Ras-ul-Khima, | Ditto | 270 |
| *Ras-ul-Urhud, | Ditto | 271 |
| *Ras-ul-Zoor, | Ditto | 271 |
| Rat I., | Rio de la Plata | 64 |
| Ratos I., | Rio Janeiro | 56 |
| †Raumps, | Persian Gulf | 269 |
| Raza I., | Rio Janeiro | 56 |
| Razo Cape, | Portugal | 4 |
| *Razor I., | Africa, E. | 188 |
| Recherche Archip. | Terra Australis | 97 |
| *Recife Cape, | Africa, S | 82, 179 |
| Red Bay, | Ceylon, S. | 359 |
| *Red I., | New Holland | 103 |
| †Redondo I., | Brazil | 58 |
| Red Sea, | Arabia | 212 |
| Red Sea Winds, | Ditto Coasts | 231 to 234 |
| †Reef Buoy, | Hoogly River | 405 |
| Reef du Tombeau, | Mauritius I. | 125 |
| *Reef of Breakers, | Red Sea | 223 |
| †Ditto | Ditto | 224 |
| Reet's Bay, | Africa, S. | 72 |
| Reid's Rocks, | Bass' Strait | 94 |
| *Re I., | France | 2 |
| Remer's | Highland, Persian Gulf | 268 |
| *Remire I., | Seychelles | 141 |
| †Rettna Geriah, | Malabar C. | 305 |
| Rewbun Point, | Africa, E. | 184 |
| Rigum Point, | Persia, S. | 151 |
| Rio de la Plata, | America, S. | 59 |
| *Rio Janeiro | Brazil | 51, 55 to 57 |
| Rischar Point, | Persian Gulf | 265 |
| Robben I., | Africa, S. | 73 |
| Robbers River, | Ditto, E. | 185 |

| | | Page. |
|---|---|---|
| *Roca Cape, | Portugal | 4 |
| *Roccas, | Atlantic Ocean | 29,52 |
| †Roche Bonne, | France | 2 |
| Rochfort, | Ditto | 2 |
| *Rockingham Shoal, | Red Sea | 219 |
| *Roderigue I., | Indian Ocean | 122 |
| Rodondo I., | Rio Janeiro | 56 |
| Rodondo I., | Bass' Strait | 94 |
| Rodondo I., | Arabia, S. | 238 |
| *Rogues River, | Africa, E. | 198 |
| Roman Rocks, | Africa, S. | 78 |
| Rondal Point, | Spain | 4 |
| Rondo Pulo, | Sumatra, N. | 426, 432 |
| *Roque Cape, | Brazil | 51, 53 |
| *Roque Ca. Shoal, | Ditto | 51, 53 |
| *Roquepez I., | Indian Ocean | 143 |
| *Rose Galley Rocks, | Ditto | 144 |
| †Rosemary I. & Reefs, | New Hol. | 101,106 |
| †Rottenest I., | Ditto | 98 |
| Round I., | Cape Verds | 16 |
| Round I., | Mauritius | 124 |
| Round I., | Trincomale Bay | 369 |
| Round Mountain, | Africa, S. | 178 |
| Round Point, | Trincomale Bay | 370 |
| *Roxa Cape, | Africa, W. | 47 |
| †Roymatla River, | Bengal | 417 |
| Roymungal River, | Ditto | 418 |
| *Ruttera Point, | Malabar C. | 318 |

S.

| | | Page. |
|---|---|---|
| Saboyna Rocks, | Socotra I. | 203 |
| *Sabugar Is., | Red Sea | 217 |
| *Sacrifice Rock, | Malabar C. | 314 |
| Saddle Bush, | Coromandel | 380 |
| Saddle Hill, | Saldanha Bay | 72 |
| Saddle I., | Mayotta | 170 |
| Ditto | Johanna | 170 |
| *Sadras & Hills, | Coromandel | 384 |
| Saduckdeen I., | Zeyla Bay | 206 |
| †Sagor Channel, | Hoogly River | 404,405 |
| Sagor I., | Ditto | 404 |
| Sagor Mid. Ground, | Ditto | 402 |
| †Sagor Sand, | Ditto | 404, 435 |
| *Sahul Bank, | Timor Sea | 103 |
| Sail Rock, | Malabar C. | 309 |
| †Salaka, | Abyssinia | 215 |
| Salamander Point, | Saldanha Bay, | 72 |
| Salame I., | Persian Gulf | 255 |
| †Saldanha Bay, | Africa, S. | 71 |
| *Sal I., | Cape Verds | 12 |
| Salinas Bank, | Brazil | 51 |
| †Salomon Is., | Indian Ocean | 149 |
| Salset River, | Malabar C. | 309 |
| *Salvadore St., | Brazil | 51, 53 |
| †Salvora I., | Spain | 4 |
| Sambor River, | Trincomale Bay, | 369 |
| *Sandalwood I., | Timor Sea | 107,109 |
| *Sand Banks, | Ditto | 103 |
| †Sandwich Har., | Africa, S. | 50 |
| Sandy Bay, | Ascension I. | 32 |
| †Sandy I., | Madagascar, E. | 132 |
| *Ditto, | Ditto Sea | 133 |
| *Ditto, | Indian Ocean | 143 |
| *Ditto, | Madagascar, W. | 153 |
| †Ditto, | Africa, E. | 174 |
| †Ditto, | Red Sea | 218 |
| †Sandy Is., | Indian Ocean | 149 |
| *Ditto, | Red Sea | 218 |
| Santa Clara I., | Canarics | 11 |
| *Santa Cruz, | Ditto | 10 |
| †Santa Cruz, | Africa, W. | 50 |
| Santiago Point, | Rio de la Plata | 66 |
| †Santipilly Rocks, | Coromandel | 395 |
| †Santos Bay, | Brazil | 58 |
| Sanxete Fort, | Portugal | 4 |
| *Sapy Strait, | Sumbawa I. | 110 |
| Sardi I., | Arabia, S. | 238 |
| Sarcebingo Point, | Madagascar, E. | 176 |
| *Sarum Shoals, | Red Sea | 219 |
| Sauger Highland, | Arabia, S. | 236 |
| *Savu I., | Timor Sea | 109 |
| *Saxemburg I., | Atlantic, S. | 68 |
| *Saya de Malha, | Indian Ocean | 134 |
| Schapen I., | Saldanha Bay | 72 |
| Schanck Cape, | Bass' Strait | 96 |
| †Schenas, | Arabia, E. | 243 |
| Schinas Bay & Town, | Pers. G. | 259,260 |
| Schittuar I., | Ditto | 262 |
| Scindy Coast, | Hindoostan, W. | 246 |
| *Scind River, | Scindy C. | 247 |
| †Scorpion Shoal, | Persian Gulf | 263,271 |
| *Scott's Reef, | Timor Sea | 102 |
| Sea Arm Point, | Mauritius I. | 125 |
| *Sea Cows I., | Seychelles | 140 |
| Sea Elephant Bay, | Bass' Strait | 94 |
| Sea Horse Point, | Africa, E. | 187 |
| *Seal Cape, | Mossel Bay | 177,178 |
| Sealers Cove, | Bass' Strait | 96 |
| Seal Island, | Simon's Bay | 78 |
| Seal I., | Mossel Bay | 177 |
| *Seal I., | Africa, S. | 181 |
| Seal Is. | Bass' Strait | 97 |
| *Searbett I., | Guzarat | 274 |
| *Sea Reefs, | Hoogly R. 401, 403, | 410, 412 |
| *Sebastian Cape, | Africa, E. | 185 |
| *Sebastian St. Bay, | Ditto, S. | 176 |
| *Sebastian St. Ca., | Madagascar, N, | 158 |
| †Sebastian St. I., | Brazil | 58 |
| Second I., | Madagascar, W. | 158 |
| Secretaries I., | Malabar C. | 308 |
| Sediva I., | Maldivas | 331 |
| Segar, | Allass Strait | 110 |
| Seger Mountains, | Arabia, S. | 237 |
| †Seguro Porto, | Brazil | 54 |
| †Sena, | Africa, E. | 187 |
| Serpents' I., | Mauritius I. | 124 |
| *Serpents' River, | Manar Gulf | 350 |
| *Sester's Grand, | Guinea | 41 |
| Ditto Little, | Ditto | 41 |
| Settra Krow, | Ditto | 41 |
| Severdon Bay, | Malabar C. | 304 |
| †Severndroog I., | Ditto | 304 |
| *Seuheli-par Is., | Laccadivas | 325 |
| *Seychelle Is., | Ind. Oc. | 140, 174, 434 |
| Seyer Is., | Bengal Bay | 431, 435 |
| *Shadwan I., | Sea of Suez | 225 |
| Shahar, | Arabia, S. | 236 |
| Shallingers' Sand, | Coromandel | 389 |
| *Sharga, | Persian Gulf | 270 |
| *Sharks Bay, | New Holland | 99 |
| Sharma, | Arabia, S. | 236 |
| Sharwin, | Ditto | 237 |
| Shaumaul, | Persian Gulf | 253 |
| Shefean I., | Africa, E. | 184 |
| Sheid Point, | Persia, S. | 250 |
| *Sheik Deeni I., | Zeyla Bay | 206 |
| *Sheik Shaib I., | Persian Gulf | 262 |
| *Shepherds I., | Seychelles, | 142 |
| Shoal Cliff, | Arabia, S. | 239 |
| *Shoals Doubtful, | Southern Ocean | 87 |
| Silhouette I., | Seychelles | 140 |
| Simon's Bay, | Africa, S. | 78 |
| †Simon's Bay, | Sea of Suez | 229 |
| Sinai Mount, | Arabia, W. | 227, 229 |
| Sinnacapa River, | Africa, E. | 191 |
| Sippeler River, | Coromandel | 390 |
| Sirancapa River, | Africa, E. | 191 |
| Sir R. Curtis's Is., | Bass' Strait | 94 |
| *Sister Hills, | Abyssinia | 212 |
| Sister Hills, | Red Sea | 215 |
| *Sisters' Is., | Ditto | 219 |
| *Six Is., | Indian Ocean | 148 |
| Sizarga Is., | Spain | 3 |
| *Slot Van Capelle, | Southern Ocean | 88 |
| Smith's Winkle, | Africa, S. | 78 |
| *Socotra I., | Arabian Sea | 202,232 |
| *Sofala R. & Town, | Africa, E. | 186,191 |
| *Sofala Shoals, | Ditto | 186, 188 |
| *Sofia Shoals, | Red Sea | 219 |
| †Sohar, | Arabia, E. | 243 |
| †Sohar Rocks, | Ditto | 244 |
| Solinga Pagodas, | Coromandel | 393,394 |
| Solor Strait, | Timor Sea | 109 |
| †Somaulee Village, | Africa, E. | 206 |
| Somembo River, | Ditto | 193 |
| Sommaverom R., | Coromandel | 396 |
| Sonmeany, | Persia, S | 248 |
| Soomia I., | Gulf of Cutch | 275 |
| Sor, | Arabia, E. | 241 |
| Souiak, | Ditto | 243 |
| Sounchee Rocks, | Malabar C. | 308 |
| South Cadally I., | Red Sea | 212 |
| *South Channel, | Maldivas | 343 to 346 |
| Southeast Prong, | Bombay Harbour | 294 |
| Southern Passage, | Indian Ocean | 245 |
| †South I., | Red Sea | 223 |
| Southwest Prong, | Bombay Harbour | 293 |
| Spain, | Europe | 3 |
| *Speaker's Bank, | Indian Ocean | 150,433 |
| †Spencer's Bay, | Africa, S. | 50 |
| *Spencer's Gulf, | Terra Australis | 93 |
| Square I., | Rio Janeiro | 57 |
| Stadden River, | Africa, S. | 180 |
| Stag I., | Seychelles | 140 |
| *Stag I., | Africa, S | 180 |
| *Star Bank, | Madagascar | 152,153 |
| Star I., | Seychelles | 142 |
| Struys Bay, | Africa, S. | 81,176 |
| †Stummum Point, | Sea of Suez | 229 |
| *Suadiva Atoll, | Maldivas | 335,341 |
| *Suadiva Channel, | Maldivas | 342 |
| *Suakim, | Red Sea | 215 |
| Subtermooky River, | Bengal | 415 |
| *Success Bank, | Indian Ocean | 142 |
| Sudaap Cove, | Arabia, E. | 242 |
| Sudasaghur Fort, | Malabar C. | 310 |
| *Suez, | Red Sea | 230 |
| Suez Sea, | Ditto | 224 |
| *Suffeenot Shoal, | Ditto | 214 |
| Sugar Loaf, | St. Helena I. | 34 |
| *Sugar Loaf, | Rio Janeiro | 56, 57 |
| Sugar Loaf, | Africa, S. | 73 |
| Sugar Loaf, | St. Paul I. | 90 |
| Sugar Loaf, | Juddah | 221 |
| Sugar Loaf, | Persian Gulf | 271 |
| †Sugar Loaf, | Ceylon, E. | 366 |
| Sugar Loaf, | Coromandel | 395 |
| †Sultanpore River, | Guzarat | 284 |
| Sumatra, | Bengal Bay | 432, 434 |
| *Sumbawa I., | Timor Sea | 110 |
| Sumtra I., | Socotra | 203 |
| †Sun Deep I., | Bengal | 421 |
| Sunga Deep I., | Persia, S. | 249 |
| Sunken Rock Shoal | Bombay Har. | 294 |
| Surajee I., | Basra River | 269 |

| | | Page. |
|---|---|---|
| *Surat Castle, | Surat River | 281 |
| Surat Passage, | Achen | 426, 433 |
| *Surat Road, | Hindoostan, W. | 273, 280 |
| †Surde I., | Persian Gulf | 260 |
| Suree Fort, | Bombay Harbour | 295 |
| †Suzar | Persian Gulf | 257 |
| Swallow Point, | Surat River | 280 |
| Swallow Sands, | Cambay Gulf | 282 |
| Swallow Shoal, | Sea of Suez | 226 |
| Swardy Is. & Town, | Arabia, E. | 243 |
| †Swatch of no Ground, | Bengal Bay | 411 |
| *Swifts Bank, | Indian Ocean | 143 |
| Sybelyat, | Basra River | 269 |

T.

| | | |
|---|---|---|
| *Table Bay, | Africa, S. | 68, 73 |
| *Table Cape, | Madagascar, N. | 156 |
| Table Mountain, | Africa, S. | 73, 76 |
| †Tahric, | Persian Gulf | 263 |
| Taida, | Bengal | 418 |
| Talloqueen Point, | Africa, E. | 184 |
| *Tamarida Bay, | Socotra I. | 202 |
| †Tamatave, | Madagascar, E. | 129 |
| Tanasserim Is., | Bengal Bay | 431 |
| *Tangala Is., | Java, S. | 112 |
| Tangale, | Ceylon, S. | 360 |
| Tanka River, | Persia, S. | 252 |
| Tannacudia Fort, | Manar Gulf | 350 |
| †Tanore, | Malabar C. | 315 |
| Tapamandy River, | Africa, E. | 191 |
| Taporica I., | Brazil | 54 |
| Tarrafal Bay, | Cape Verds | 16 |
| Tarud I. & Town, | Persian Gulf | 271 |
| *Tattah, | Scindy River | 247 |
| Taugalane Point, | Africa, E. | 187 |
| Tearsa, | Persia, S. | 251 |
| Teintique, | Madagascar, E. | 132 |
| Teiz, | Persia, S. | 251 |
| *Telemaque Shoal, | Africa, S. | 86 |
| Tella Tellah I., | Red Sea | 214 |
| *Tellicherry, | Malabar C. | 314 |
| *Teneriffe, | Canaries | 10 |
| Tengaypatam, | Malabar C. | 319 |
| †Tennain, | Persian Gulf | 257 |
| Tent Rock, | Madagascar, W. | 154 |
| †Ternates Shoal, | Africa, E. | 200 |
| *Terra Australis, | Southern Ocean | 93 |
| †Terrapore, | Hindoos., W. | 276, 278 |
| *Thomas St. I., | Gulf of Guinea | 39, 42, 48 |
| Thomas St. | Coromandel | 385 |
| †Thornhill's Chan. | Hoogly River | 402 |
| Three Brothers, | Gulf of Guinea | 47 |
| †Three Brothers, | Brazil | 55 |
| †Three Brothers, | Indian Ocean | 148 |
| Three Hummock I. | Bass' Strait, | 96 |
| *Three Points Cape, | Guinea | 41, 47 |
| Three Sisters I., | Seychelles | 140 |
| †Three Small Is., | Red Sea | 223 |
| Tiger Peninsula, | Africa, W. | 50 |
| Tiger Point, | Bengal | 419 |
| *Tilla Dou Matis Atoll | Maldivas | 329 |
| Tinevelly Coast, | Manar Gulf | 348 |
| Tingaro I., | Laccadivas | 324 |
| Tiran I., | Red Sea | 225 |
| Tiroomale River, | Coromandel | 382 |
| Tiroomale Washil River, | Ditto | 382 |
| * Tiwi, | Arabia, E. | 241 |
| †Todu I., | Maldivas | 333, 336 |
| *Tolonghare Bay, | Madagascar, E. | 129 |
| Tome St, Cape, | Brazil | 55 |
| *Tor Harbour, | Sea of Suez | 228 |
| *Trade Limits, | Atlantic Ocean | 16 to 26 |
| *Tranquebar, | Coromandel | 381 |
| Trees I., | Africa, E. | 188 |
| Ditto | Mozambique | 190 |
| †Trichindore Pagoda, | Manar Gulf | 349 |
| Tricoll, | Ceylon, E. | 366 |
| *Trincomale Bay, | Ditto | 368, 372, 428 |
| *Trinidad I., | Atlantic Ocean | 30 |
| †Tripaloor Hill & Reef, | Coromandel | 384 |
| *Tristan d'Acunha, | Atlantic, S. | 68, 69 |
| Trowers I., | Java, S. | 113 |
| †Tryal Rocks, | Indian Ocean | 100 |
| *Tulan Bay, | Java, S. | 112 |
| Tullear Bay, | Madagascar, W. | 155 |
| Tull Highland, | Bombay Harbour | 291 |
| Tullijah Hill, | Guzarat | 284 |
| Tull Reef & Nob, | Bombay Harbour | 292 |
| *Tumb Great, | Persian Gulf | 259 |
| †Tumb Little, | Ditto | 260 |
| Tunbat I., | Africa, E. | 195 |
| Turtle Bay, | Africa, W. | 49 |
| †Turtle Bay, | Java, S. | 112 |
| Turtle Bay, | Mauritius I. | 125 |
| Turtle I., | Africa, E. | 192 |
| *Tutacorin, | Manar Gulf | 349 |
| *Twelve Is. | Indian Ocean | 136 |
| Two Brothers, | Ceylon, N. | 377 |

U.

| | | |
|---|---|---|
| *Underoot I., | Laccadivas | 326 |
| *Ushant I., | France | 1 |

V.

| | | |
|---|---|---|
| †Vaches Cape, | Africa, S. | 81, 176 |
| Valentia I. & Land, | Red Sea | 213 |
| *Valentines Peak, | Mayotta | 169 |
| Valentines Peak, | Hindoostan W. | 278 |
| Valy Point, | Ceylon, N. | 377 |
| Van Diemen Cape, | Van Diemans La. | 93 |
| Van Diemen's Land, | Southern Ocean | 97 |
| *Vaux's Tomb, | Surat River | 280 |
| Veniam Point, | Malabar C. | 319 |
| †Veuinguebe Bay, | Madagascar, E. | 132 |
| *Venloos Bay, | Ceylon, E. | 367 |
| *Verd Cape, | Africa, W. | 47 |
| *Verd Cape Is., | Atlantic Ocean | 11 |
| †Versavah I. & Fort, | Malabar C. | 277 |
| *Victoria Fort | Malabar C. | 304 |
| *Video Monte, Rio de la Plata | | 60, 63 |
| *Vigo, | Spain | 3 |
| †Village Bay, | Africa, W. | 49 |
| Villegagnon Fort, | Rio Janeiro | 56 |
| Vincent St. Cape, | Madagascar, W. | 158 |
| Vincent St. I. | Cape Verd Is. | 15 |
| †Vingorla Rocks, | Malabar C. | 307 |
| *Vizagapatam, | Coromandel | 394, 426 |
| Vleer Muys Bay, | Java, S. | 112 |
| †Vohemare Bay, | Madagascar, E. | 132 |
| *Voltas Cape, | Africa, W. | 50 |
| Vouch Bay, | Persia, S. | 250 |

W.

| | | |
|---|---|---|
| Walltear House, | Vizagapatam | 395 |
| Waluwe River, | Ceylon, S. | 360 |
| *Walvish Bay, | Africa, W. | 50 |
| *Warley's Shoal | Atlantic Ocean | 27 |
| Warrell River, | Scindy C. | 247 |
| †Wattara, | Coromandel | 394 |
| †Western Brace, | Hoogly River | 401 |
| Western Channel, | Ditto | 403, 405 |
| †Western Port, | Bass' Strait | 96 |
| †Western Sea Reef, | Hoogly River | 403, 435 |
| *West I., | Albadra Islands | 138 |
| West I., | Diego Garcia | 145 |
| *West I., | Madagascar, N. | 158 |
| †Westminster Abbey, | Ceylon, E. | 366 |
| Westminster Hall, | Madag. W. | 153, 155 |
| †West Shab, | Sea of Suez | 226, 228 |
| Whale Reef, | Africa, S. | 178 |
| Whale Reef, | Point de Galle | 356 |
| Whale Rock, | Cape Good Hope | 75 |
| Whales of Ars | France | 2 |
| White Is., | Cape Verds | 16 |
| White Sand Downs, | Africa, S. | 79 |
| Whitter Clip, | Africa, S. | 72 |
| Whittle Rocks, | Cape Good Hope | 78 |
| *Wilson's Promontory | Bass' Strait | 94, 96 |
| Winds | Indian Seas | 115 |
| *Wine-Coopers Point, | Java, S | 113 |
| †Wood I., | Madagascar, N. | 158 |
| Woody I., | Ceylon, S. | 359 |
| Wright's Rock, | Bass' Strait | 95 |

Y.

| | | |
|---|---|---|
| *Yambo, | Red Sea | 222 |
| Yamah, | Persian Gulf | 271 |
| †Yedoe Cape, | Ditto | 269 |
| York I. & Shoal, | Trincomale Bay | 370 |
| Youe River, | Africa, E. | 194 |

Z.

| | | |
|---|---|---|
| †Zaframa Point, | Sea of Suez | 229 |
| Zaine Point, | Basra River, | 269 |
| *Zanzibar I. & Town, | Africa, E. | 173, 194 |
| Z. Cape, | Malabar C. | 304 |
| Zebarra, | Persian Gulf | 271 |
| Zee Hill, | Red Sea | 211 |
| †Zeite Peninsula, | Sea of Suez | 222, 226 |
| Zemba Ponta de, | Sofala | 186 |
| Zeno, | Africa, E. | 191 |
| *Zeyla, | Ditto | 206 |
| *Zezarine I. | Persian Gulf | 264 |
| *Zocotra, I. | Arabian Sea | 202 |
| Zoar, | Arabia, E. | 241 |
| *Zwartkop's Bay. | Africa, S. | 179 |
| Zwartkop's River, | Ditto | 180 |
| *Zyghur Point, | Malabar C. | 305 |

# INDIA DIRECTORY,

OR

## Directions for Sailing

TO AND FROM THE

# EAST INDIES,

## China,

## NEW HOLLAND, CAPE OF GOOD HOPE, BRAZIL,

AND THE

## *INTERJACENT PORTS,*

COMPILED CHIEFLY FROM

ORIGINAL JOURNALS AT THE EAST INDIA HOUSE,

AND FROM

## Observations, and Remarks,

*MADE DURING TWENTY-ONE YEARS EXPERIENCE NAVIGATING IN THOSE SEAS.*


BY

***JAMES HORSBURGH, F.R.S.***

HYDROGRAPHER TO THE HONORABLE EAST INDIA COMPANY.


They that go down to the sea in ships, that do business in great waters; these see the works of the Lord, and his wonders in the deep. PSALM CVII. v. 23, 24.

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# CONTENTS.


PAGE

EASTERN SIDE of the Bay of Bengal. Coasts of Chittagong, Aracan, and Ava, with Sailing Directions. 1st Coast of Chittagong. ..... 1

2d Coast of Aracan from the White Cliffs to the Island Cheduba. ..... 4

3d Directions for Sailing to the Town of Cheduba, and betwixt that Island and the main. ..... 5

4th Coast of Ava to Cape Negrais, and the Islands adjacent. ..... 7

Coast of Pegu; Directions for Sailing to, and from Rangoon River. ..... 12

Tanasserim Archipelago, Aladin, and Seyer Islands; and that Coast from Mergui to Junkseylon, with Sailing Directions. ..... 22

Andaman Archipelago; with Sailing Directions. ..... 26

Nicobar Islands, with Sailing Directions. ..... 33

West Coast of Sumatra. 1st Achen, and the circumjacent Islands with Sailing Directions, Winds and Currents. ..... 39

2d Monsoons; Channels along the West Coast of Sumatra; and Sailing Directions from Achen Head to Bancoongong Bay. ..... 44

3d Directions for Sailing along the Coast from Bancoongong to Padang; adjoining Islands and Shoals. Also Directions to Sail from Padang to the northward. ..... 50

4th. Coast, Islands, and Shoals, from Padang to Fort Marlborough, with Sailing Directions. ..... 63

PAGE

5th. Coast from Fort Marlborough to Flat Point, with Sailing Directions. ..... 73

Principal Islands fronting the West Coast of Sumatra; with Sailing Directions. ..... 76

Sailing Directions to, and from the Strait of Sunda, and toward the Straits East of Java; North Coast of the former, and adjoining Islands. ..... 86

South side of Sunda Strait, with Sailing Directions to Batavia. ..... 96

Directions for Sailing from Batavia, and Sunda Strait, to the Strait of Banca: Islands and Dangers in the Passage. ..... 106

Strait of Banca; with Sailing Directions. ..... 112

Directions to Sail from the Northward, through the Straits of Banca and Sunda. ..... 121

Gaspar Straits, with Sailing Directions; N. E. Coast of Banca. ..... 125

Sailing Directions from Banca Strait to Pulo Aor. Islands and Dangers in the Passage; also Directions for Rhio Strait. ..... 136

Directions for Sailing from Banca Strait, through the Straits of Dryon: to return southward by the same route. ..... 140

Strait of Malacca. 1st Description of Winds and Currents: Directions for Sailing into, or out of the Strait. ..... 146

2d. Coast of Pedir, with Sailing Directions; and from Diamond Point to the Arroas, along the Sumatra side of the Strait. ..... 151

CONTENTS.


PAGE

3d. Malay side of the Strait, from Junkseylon to Prince of Wales' Island, with Sailing Directions. 156

4th. Directions for Sailing from Prince of Wales' Island to the Arroas, and from thence to Parcelar Hill. ..... 162

5th. Directions for Sailing from the Sambilangs to Salangore, and through the Strait of Callam. 169

6th. Instructions for Sailing from Parcelar Hill to Cape Rachado, and from thence to Malacca. . 172

7th. Directions for Sailing from Malacca to Sincapour Strait: Coasts, Islands, Banks, and Dangers. ..... 178

8th. Sincapour Strait; Directions for Sailing through it into the China Sea. ..... 184

Directions to enter Sincapour Strait, and to return by it, and Malacca Strait. ..... 196

China Sea. Monsoons, Winds, Ty-Foongs, and Currents. ..... 200

Instructions for Sailing through the China Sea, to, or from Canton River, at all Seasons..... 205

Islands in the S. Western part of the China Sea; East Coast of Malay; with Sailing Directions..... 212

Sailing Directions to, and from Siam: Coast of Cambodia; Pulo Oby, Pulo Condore, and adjacent Islands, with Sailing Directions. ..... 222

Sailing Directions for the Coast of Tsiompa; Dangers adjacent, Pulo Ceicer de Mer, Pulo Sapata, Catwicks, and contiguous Channels..... 229

Coast of Cochin-China, from Cape Padaran to Cape Turon; Directions for sailing into the Harbours, and along the Coast..... 237

Gulf of Tonking, and the Island Hainan, with Sailing Directions..... 246

Paracels, and the Banks or Dangers in the northern part of the China Sea. ..... 252

Islands and Harbours on the South Coast of China, westward of Canton River, with Sailing Directions..... 257

Islands, Channels, Bays, or Harbours, on the Coast of China, eastward of, and near Canton River; with Directions for Sailing toward that River... 268

PAGE

Directions for Sailing into the Typa, also from Macao Road to Bocca Tigris, and from thence into Canton River, to the Second Bar, and to Whampoa. ..... 284

Coast of China to the eastward of the Lema Channel, with Sailing Directions for Ta-thong-moon Passage, Mir's Bay, Harlem's Bay, and Ty-poong Harbour; with brief Directions for Sailing to Amoy, Chinchew, and Chusan Harbours; and from thence to the Gulf of Pe-che-lee..... 295

Directions for Sailing between Canton River and Manilla Bay, in either Monsoon; and to Pulo Aor, and the Strait of Banca, in the N. E. Monsoon. 309

Directions for Sailing to Canton River, also to, and from Manilla, by the Outer Passage. Shoals in the S. Eastern part of the China Sea, and near the Palawan Passage, and the Island Palawan. ..... 313

West and North Coasts of Luzon, or Luconia, and the Islands contiguous; with Sailing Directions. 322

Islands, Channels, and Dangers to the northward of Luconia; with Sailing Directions from Canton River to New South Wales..... 327

Instructions for Sailing through Balabac Straits, to the Moluccas, and to Sooloo, and the Islands described. Surigao Passage, Embocadero, and East Coast of Luconia..... 336

West Coast of Borneo: Directions for Sailing along it, also between it and Billiton, by the Carimata Passage, toward the Straits East of Java, or to the Strait of Macassar..... 346

Eastern Passage to China, through the Strait of Macassar. Directions for approaching it from southward, and to Sail from Batavia through the Strait: adjacent Headlands, Islands, and Dangers. ..... 361

Directions for Sailing from the Strait of Macassar, between Mindanao and Celebes, into the Pacific Ocean: Coasts, Channels, and Islands..... 374

Directions for Sailing from the Strait of Macassar to the westward of the Philippine Islands. Channels, Dangers, and Headlands adjoining..... 382

Directions for the returning Passage from China, on the West sides of the Philippine Islands..... 394

CONTENTS.


PAGE

Eastern Route to China, by the Pitt's Passage. 1st. Directions for Sailing from Batavia to the Straits of Salayer: adjoining Islands, Banks, and Dangers. ..... 399

2d. Instructions for Sailing through the Pitt's Passage: contiguous Islands and Coasts. ..... 410

3d. Gillolo Passage: Islands and Harbours adjacent, with Sailing Directions..... 417

4th. Dampier's, and Pitt's Straits, with Sailing Directions: Coasts, Islands, and contiguous Dangers. ..... 424

Instructions for Sailing from Dampier's Strait toward China: Coasts, Islands, and Dangers, adjacent to the Passage. ..... 434

Directions for Sailing from China, outside of the Philippine Islands, and through the Pitt's Passage into the Ocean. ..... 444

Straits to the eastward of Java. 1st. North, and Eastern parts of Java: adjacent Islands, Straits of Bally, and Lombock, with Sailing Directions. 450

2d. Great Pater Nosters; Straits of Allass and Sapy, with Sailing Directions. ..... 459

3d. Description of Flores; Islands, Dangers, and Straits adjacent; with Sailing Directions. .... 466

PAGE

4th. Wetter, Timor, and other Islands contiguous to the Ombay Passage; with Sailing Directions... 475

Monsoons, Winds, and Weather, and Islands in the Molucca, and Banda Seas; with Sailing Directions..... 482

Passage to China, eastward of New Holland. Van Diemen's Land, and the contiguous Ports; with Sailing Directions. ..... 492

Ports, or Places of Shelter, on the S. E. Coast of New South Wales; with Sailing Directions to, and from Port Jackson. ..... 501

Sailing Directions from Van Diemen's Land, or Port Jackson, by Northern Routs toward India or China. Contiguous Islands and Dangers..... 508

Passage from India toward Europe. 1st. Instructions for Sailing from India, round the Cape of Good Hope, to St. Helena. ..... 522

2d. Instructions for Sailing from St. Helena to the Island Ascension, and toward the British Channel. Description of the Islands Azores. .... 527

3d. Directions for entering the British Channel, and to Sail inward to the Downs..... 531

## Errata.

By a careful revision of the press, typographical errors have been nearly excluded from this extensive work; all that have been discovered, after a rigid examination, are the following.

| *Page.* | *Line.* | | | |
|---|---|---|---|---|
| 66 | 15 | from bottom, | for concavitives, | read *concavities.* |
| 72 | 21 | top, | Lambo | *Lamo.* |
| 301 | 21 | do. | Isang | *Tsang.* |
| 341 | 19 | bottom | Island | *Islands.* |

# EASTERN SIDE

OF THE

# BAY OF BENGAL.

## *COASTS OF CHITTAGONG,* ARACAN, and AVA, with SAILING DIRECTIONS.*

### 1st. COAST OF CHITTAGONG.

WHITE SANDY CLIFFS, fronting the sea on the northern part of the coast of Aracan, extend from lat. 21° 10′ to 21° 24′ N., and are separated by the opening of Cruzcool, from Mascall Island and the Coast of Chittagong. The opening of Cruzcool has deep water inside, but it will not admit vessels of any kind, on account of a reef stretching from Cruzcool Point 7 or 8 miles to the W. N. W., and joining to the southern part of the large Island Mascall. Nearly on the western extremity of this reef in lat. 22° 28′ N., and 2 miles from the S. W. end of Mascall, is situated a small sandy island with some shrubs on it, called Red Crab Island, having breakers extending around to a considerable distance, with very irregular soundings near them. White Cliffs and the adjacent coast.

From lat. 21° N. to the White Cliffs, the coast of Aracan is bold and safe to approach, with good anchoring ground: all vessels bound to Chittagong, or those that may be driven to the eastward by stress of weather in the S. W. monsoon, should therefore, endeavour to make that part of the coast. Between the *third* and *fourth* of the Sandy Cliffs, counting from the northward, there is a small run of fresh water, where ships which happen to be becalmed in the fair season, may obtain a supply of that necessary article.

After making the land, a vessel must haul off to the westward to avoid the Banks of Kuttupdeah and Mascall, which commence off the entrance of Cruzcool; some of them are 9 or 10 miles off shore, having channels inside, but it would be imprudent to attempt to proceed through these channels. The outermost bank, is steep on all sides, having from 15 to 20 fathoms close to, and only 6 or 8 feet on it at low water. Directions for sailing along it to the northward.

THE FLOOD, sets toward the entrance of Cruzcool and the channel that separates Mascall Island from Kuttupdeah, rendering it still more necessary to keep a good offing, after leaving the White Cliffs.

Should hazy weather prevent the White Cliffs from being discerned until a ship is close in with them, when the wind is too far westerly for her to clear the shoals, a place of shelter may be found, by sailing within the westernmost shoal, or even within Kuttupdeah if ne-

* Chiefly from Capt. J. Richie's Survey of that coast.

cessary. To gain this place, she ought to pass Red Crab Island, in 8 fathoms, then bearing East about a league, and from this station she ought to steer about N. by W. in 10 to 15 fathoms until the passage between Kuttupdeah and Mascall is quite open; she should then steer direct for the opening, about N. E. by N., in 7 to 10 fathoms water, taking care to avoid the shoals lining the shore on both sides of the entrance; having got within the point of Kuttupdeah, she may anchor secure, in 10 fathoms soft ground. From the point of that Island, a spit extends S. W. by S. upward of 2 miles, and a bank stretches from the Mascall shore to the distance of $1\frac{1}{4}$ mile, both of which will be avoided by keeping the passage quite open as directed above. It would be improper to run 1 mile within the point of Kuttupdeah, for about 2 miles within the entrance, a bank projects from that island more than half way across the channel. The channel that separates Mascall Island from the mainland is narrow, having only 1 fathom water in some places.

Uckoia channel.

THE CHANNEL inside of Kuttupdeah, which separates it from the north part of Mascall Island and from the main, called Uckoia by the natives, is safe for ships of considerable burthen; and the soundings in it are various, from $3\frac{1}{2}$ or 4, to 7 and 8 fathoms. The northern entrance of this channel, formed between the north end of Kuttupdeah and Cuckold's Point, is contracted by banks on each side which stretch to a considerable distance to seaward, having 4 fathoms in the fair track between them. These banks are visible when the tide is low, but are overflowed in high tides, making it prudent for a ship going in or out by this passage, to keep a boat sounding on each bow.

About 3 or 4 miles inside of Cuckold's Point, lies the entrance of Kentlaw River, having 4 and 5 fathoms between the banks that project from each side; this river affords good shelter in the S. W. monsoon, but is not above a cable's length from side to side, and $\frac{1}{2}$ a mile inside, it divides into 2 branches: 1 of these takes an easterly direction to Julkuddar Fort, where there is fresh water; the other called Khaut Colley, stretches to the West and N. Westward, and communicates with the sea a little to the northward of Cuckold's Point, by which that part of the land forms an island. Khaut Colley River or Creek, is very shoal, and will not admit vessels of any size, but the opposite entrance of Kentlaw, although narrow, forms a safe harbour.

Kuttupdeah, or

KUTTUPDEAH ISLAND, is about 4 leagues in length nearly North and South, the North end being in about lat. 21° 56′ N. On the South end there is fresh water close to a tope of trees, and several creeks are found on the eastern side, 1 of these called Pilot Cotta Creek, divides the island in 2 parts, having 5 or 6 fathoms water at its eastern entrance, and 5 feet on the bar where it joins the sea on the west side of the island.

Mascall Islands.

This island is low and woody; that to the southward called Mascall, has some small elevations, and from the latter being the largest, they are *generally* known by the name of Mascall Islands.

About $3\frac{1}{2}$ leagues from the North end of Kuttupdeah and $2\frac{1}{2}$ leagues from Chittagong River, is the entrance of Anghor Colley or Sunkar River, which has shoals barring it, and lining the coast from thence southward; this having a large opening, may at first be mistaken for Chittagong River. Exclusive of the shoals near Kuttupdeah, there is said to be 1 about $5\frac{1}{2}$ leagues to the westward, and another 9 leagues off shore in lat. 22° N. for which a good look out is requisite when a ship comes from the west toward this part of the coast during the N. E. monsoon, more particularly, as their *true* situations are not known.

To sail from the White Cliffs to Chittagong River.

A ship being abreast of the White Cliffs, in lat. 21° 10′ N., in 18 fathoms water, and bound to Chittagong with the wind fair, a North course will carry her clear of all the shoals, passing them in 10 and 12 fathoms, with an offing of 4 to $4\frac{1}{2}$ leagues from the Mascall Islands. When the South end of Kuttupdeah bears E. by N., she is past the North end of the outermost shoal, and may haul in more toward the shore, keeping an offing of 9 or 10

fathoms, full 2 leagues from Kuttupdeah. When past this island, she may haul still nearer the shore, and steer along it about a league distant in 6 fathoms, until the mouth of Chittagong River is seen. The distance from Kuttupdeah to the river's mouth, is about 6 leagues, and the course N. $\frac{3}{4}$ W.; the coast between them is low and flat near the sea, but hilly 2 leagues inland. If the weather is clear, it will not be easy to mistake Anghor Colley entrance for that of Chittagong River, nor to miss the latter, which lies in lat. 22° 13′ N. The chain of hills between Kuttupdeah and the river, situated about 6 miles inland, ends in a point about 3 miles south of the parallel of the river's mouth. To the N. W. 4 or 5 miles from the end of this chain of hills, there are 2 small detached clusters of hills within 3 miles of the shore, the northernmost of which lies close behind the Bunder, or anchoring place, in the river.

FAKEER'S TREE, and Flagstaff, may be discerned although the weather should be hazy, as they are both close to the shore; the latter stands $1\frac{1}{4}$ mile to the southward of Norman's Point, which is the south point of the entrance of the river; the Fakeer's Tree is thick and bushy, situated 3 miles to the southward of the same point, and 4 miles north of Anghor Colley.

In very clear weather, the hill called Shakbroage, with 2 round trees and a flagstaff on it, will be seen when abreast of the Fakeer's Tree bearing N. $\frac{1}{2}$ E. distant 10 or 11 miles; this hill terminates on the south, a chain of low hills extending parallel to the coast, in which Seetacoon Hill opposite to the Island Sun-Deep, is the highest and most remarkable, having on it a small Pagoda.

The bottom between Kuttupdeah and Chittagong River is stiff and good for anchorage, and a ship bound into that river, wanting a pilot, should anchor abreast of the Fakeer's Tree in 6 fathoms, about $1\frac{1}{2}$ mile from the shore, from whence a gun may be heard at Islamabad; but in strong gales, the sea here runs very short, and often breaks all over a small vessel.

It would be dangerous to enter the river without a pilot, but the following directions may be useful, if a ship should be obliged to run into it from necessity.

NORMAN'S POINT, forming the South side of the entrance, is low, with a shoal projecting from it to S. Westward, but it is steep on the North side facing the river, the channel of which runs close by the southern bank, and then to seaward in a S. W. direction. Therefore, to enter the river, bring the steep, or North side of Norman's Point, to the eastward of N. E., so as to open the bank of the river within it, and steer directly in N. E., and along the southern shore at 30 or 40 fathoms distance; when past 2 small creeks in the Bunder green, drop an anchor under foot, and moor immediately, the channel being not above a cable's length across. There is a clump of trees at the foot of Bunder Hill, and close to the river; the anchorage is $\frac{1}{2}$ a mile below this clump, and opposite to it, the channel of the river takes a direction toward the other side. From the anchoring place, Shakbroage bears North. And into that river.

In the S. W. monsoon, the bar of the river looks frightful, as the sea breaks over it in most places, and the North side of the entrance is bounded by sands which dry at half ebb. It is high water on the bar at 1 hour on full and change of the moon, and the best time to enter the river is at high water *slack*. The flood sweeps so rapidly across the entrance, that it is dangerous to attempt going in while it is making. Next to high water slack, the best time to enter it is when the ebb has begun to make, but then, there is a risk of being driven on the flat of Norman's Point. The best track over the bar has more than 4 fathoms at high water, and in drawing near the bank of the river, the depths increase to 5, 6, and 7 fathoms.

Geo. site of Islamabad.

ISLAMABAD, the principal town on the coast of Chittagong, is about 2½ leagues up the river, bearing nearly N. ¼ E. from Norman's Point, and in lat. 22° 21′ N. lon. 91° 45′ E. deduced from an observation made there, of the Transit of Venus over the sun's disc, in 1761. It is under the protection of the Bengal government, and is a place of some trade, there being a marine yard where ships of considerable burthen are constructed, and good sailcloth manufactured. Grain is procured at a very reasonable rate, the adjacent country abounding in rice.

To sail from Chittagong River to Bominy Harbour.

Should a ship arriving at the entrance of Chittagong River in blowing weather, draw too much water to attempt to cross over the bar, and be unable to anchor outside, from a deficiency of ground tackle or otherwise, she may bear away for Bominy Harbour, a place of shelter about 12½ leagues to the northward of Chittagong River, formed between the Island Bominy and the main land.

In proceeding towards it, she must steer along shore at less than 2 miles distance, keeping in 6 fathoms; the course is from N. by W. ½ W. to N. W. by W., the land embaying. When the passage between Sun Deep and Bominy begins to open, she ought to haul closer to the main land, so that by the time the North end of Sun Deep is brought to bear West, or Seetacon Hill nearly East, she may be within a mile of the shore. Coasting along at that distance in 7 and 8 fathoms water, the reef that projects near 5 miles from the S. E. end of Bominy, will be avoided; and having run about 8 miles, the East point of Fenny River will begin to open, distant about 8 miles, which was before shut up in the low round point that forms the eastern side of the entrance of Bominy Harbour; she must then haul over toward Bominy Island, and having got into 5 fathoms (at low water) within 1½ mile of the shore, may anchor securely. When at anchor, the S. E. point of Bominy will be very little open with the N. E. point of Sun Deep, and Seetacon Hill will bear E. S. E. The lat. is 22° 39′ N. It is proper to anchor nearer to the Island than to the main, in order to avoid the stream of tide of the great Fenny River, the flood of which comes in with great rapidity on the springs, producing a bore in the narrow parts of the river. It is high water in Bominy Harbour, at 2½ hours on full and change of the moon.

## 2d, COAST OF ARACAN, FROM THE WHITE CLIFFS TO THE ISLAND CHEDUBA.

Geo. site of Dombuck Point.

DOMBUCK POINT, or Elephant Point, in about lat. 21° 10′ N., about lon. 91° 58′ E. is the southern extremity of the range of white cliffs that fronts the sea on the northern part of the coast of Aracan; and on the South side of this point, there is a shoal bay, with the entrance of a river, called by some persons Dombuck River.

St. Martin's Island.

ST. MARTIN'S ISLAND, in lat. 20° 34′ N., distant 13 leagues S. S. E. from Dumbuck Point, and 4 or 5 miles from the shore, is low, and called sometimes Tree Island. About 3 leagues northward from it, at the entrance of St. Martin's River, there are 3 other Islands near the shore, with sand banks fronting them, and shoal water extending to the southernmost Island, and from thence along the coast to the entrance of Aracan River.

And reef, and the coast from thence southward.

To the westward 8 miles from the southernmost St. Martin's Island, there is a dangerous reef of breakers called St. Martin's Reef, on which the ship Middleton was lost; close to it there are 4 and 5 fathoms, 9 and 10 fathoms at a small distance all round, with 8 to 10 fathoms soft ground in a safe channel between it and the Island. Ships passing this reef in the night, should not come under 20 fathoms: and it may be observed, that from this part of the coast, soundings extend directly across the bay to Point Palmiras.

MOSQUE POINT, in about lat. 20° 15′ N., forms the northern side of the entrance of Aracan River, and bears from the southernmost St. Martin's Island, about S. E. distant 9 leagues. About 3 leagues W. S. W. from this point, is situated Oyster Island, very little above water, small, rocky, and dangerous, having only a little patch of sand covering its North end, with 10 fathoms close to it. About 2½ leagues to the S. S. Eastward of it, lies a bank with 3½ or 4 fathoms on it, outside of the entrance of Aracan river. From Mosque Point, the North end of the westernmost of the Broken Islands bears about S. S. E. ½ E., distant 5 leagues; some rocky islets called the Fakier's, project from the point, between which and a chain of rocks and islets called the Savages, that stretches from the Broken Island to the N. Westward, is the proper channel into Aracan river. In this channel the depths are from 8 to 10 fathoms, and this great river is navigable a great way into the country, the depths in the fair channels being seldom under 5 or 6 fathoms*.

Mosque Point; Islands and dangers off it,

And the entrance of Aracan river.

BROKEN ISLANDS, 3 in number, lie abreast of each other, and extend about N. N. W. and S. S. E., 4 or 5 leagues; there are channels between them, and another to the eastward of the whole, leading into Aracan river; but these seem not so deep, nor so well known as the westernmost channel.

Between the 2 Western Islands, there is good anchorage in 13 or 14 fathoms mud, the soundings regular, where ships might be sheltered from N. W. and westerly winds. These Islands are mountainous, woody and rugged, without any appearance of inhabitants or cultivation; and the whole of the coast of Aracan, both to the northward and southward of them, has a similar appearance, presenting a most dreary aspect when viewed from sea.

The South ends of the Broken Islands are bounded by rugged black rocks, with others under water; but as most of them are visible and do not extend far out, they are not very dangerous. From the South end of the westernmost Island, a spit of hard ground projects to a considerable distance, having 11 fathoms on its extremity, and on each side 15 fathoms soft mud.

TERRIBLES, in lat. 19° 21′ to 19° 28′ N.,† distant from the shore about 5 leagues, are two clusters of rocks a little above water, at 4 miles distance from each other, bearing nearly N. N. E. and opposite: from the northernmost cluster, a spit of shoal water projects a great way to the N. W., with 20 fathoms close to it on each side. The southernmost cluster bears from the south end of the outer Broken Island S. S. E. ¼ E., distant about 10 leagues, and from the N. W. point of Cheduba it is about the same distance N. N. W. ¼ W., being in a direct line between them: close to it on the West side, there is 23 fathoms water, and the depths increase regularly to 100 fathoms no ground, about 6½ leagues to the westward. Ships passing along this coast, ought not to approach the Terribles in the night under 28 or 30 fathoms; and in crossing the entrance of Aracan river, they should not borrow toward Oyster Island, or the outermost Broken Island, to less than 20 or 22 fathoms.

Terribles, with directions for avoiding them.

## 3d. DIRECTIONS FOR SAILING TO THE TOWN OF CHEDUBA, AND BETWIXT THAT ISLAND AND THE MAIN.

CHEDUBA, or Shedduba, is a middling high island, extending nearly N. W. and S. E. about 7 or 7½ leagues, but from both ends, reefs and islets project several miles to seaward, which ought to be approached with great caution in the night. The outermost rocks pro-

Cheduba, Geo. site of the Northernmost rocks.

* The country in the vicinity of Aracan River abounds with rice, which here, and also at Cheduba, may be procured at a very moderate price, but the natives are generally unfriendly to Europeans, and not to be trusted.

† Some accounts place these dangers farther to the northward.

jecting from the N. W. end of the Island about 3 or 4 miles, are in lat. 18° 58′ N., lon. 93° 18′ E., or 61 miles West from Diamond Island by chronometer, and are part of a reef composed of rocks and sand-banks, above and under water, but there are 2 or 3 islets upon it which produce very tall trees, that may be seen a considerable distance.

To sail from the northward into Cheduba road.

Ships coming in to the northward of Cheduba, ought not to approach the reef under 11 or 12 fathoms water, for near it, the bottom is mostly rocky, and the soundings not very regular. Being within the reef, the water shoals very gradually to 7, 6, and 5½ fathoms, and the course should not be more to the southward than E. by S. until well over to the eastern shore, for the soundings there, are more regular and the water deeper than on the Cheduba side, which is very flat and shoal to a considerable distance. By steering along the eastern or Ramrie side at 2 or 2½ miles distance, there will seldom be less than 5 fathoms, and when to the southward of ***Rocky Point Bay***, having brought a remarkable hummock or conical mount to bear E. by N. or more northerly, the water will deepen to 6 or 7 fathoms. A ship may keep in mid-channel between Ramrie and Cheduba, when the North point of the latter bears W. ¾ S. or W. by S.; a moderately high and round island will then be seen bearing S. by E. ½ E., and by steering for it, and keeping it nearly in that direction, she will

Anchorage.

shoal gradually over to the west, toward the town of Cheduba, where she may anchor in 4½ or 5 fathoms, with Round Island bearing S. 17° E., and the town Pagoda W. ¾ S. This

Geo. site of the town Pagoda.

Pagoda has on its top, a brazen image of a large bird, resembling a goose, and is situated in lat. 18° 48′ N., lon. 93° 34′ E., or 45 miles West from Diamond Island by chronometer. Captain P. Heywood, (from whose Journal this description is chiefly taken) anchored at the town of Cheduba in H. M. S. Trincomale, on the 11th of December, 1801, in 4½ fathoms, with the Pagoda W. 19° S., Rajahs House W. 4° S., the N. E. point of Cheduba N. 59° W., mouth of the river W. 15° S., East point of Cheduba S. 8° W., centre of Low Island S. 7° E. centre of Round Island S. 18° E., the S. W. extreme of the Easternmost Island S. 47° E., Southernmost Island on that side S. 63° E., South point of Ramrie East, north extreme N. 35° W. In the road, the tide rises from 6 to 10 feet; high water about 11½ hours at full and change of the moon.

Description.

Ships may fill water at half ebb in their own boats, but it will be procured more expeditiously by the country boats, if application is made to the Rajah, though at a greater expence. The landing place is near a small wooden bridge, at a wharf about 2 miles up the river on the starboard side, where there is a bazar well supplied with poultry, hogs, goats, fruits and vegetables in abundance, at reasonable prices, and of excellent quality; but from the high veneration in which oxen are held by the natives, they are not procurable. From the entrance of the river, mud flats stretch 1½ mile out, making the approach difficult to a stranger; but inside, although narrow and winding, there is water sufficient for large boats at all times of tide.

Ramrie Island and Harbour.

RAMRIE, is a large and middling high island, forming the N. E. side of Cheduba Strait, and is well inhabited; within it there is an excellent harbour, the entrance leading to which, is round the South point of the former island, bearing nearly East from the town of Cheduba; but that harbour and the road of Cheduba are little frequented by merchant ships,* the natives being generally unfriendly, and not to be implicitly trusted.

Winds in N. E. monsoon.

Although a brisk southerly wind with a northerly current, is sometimes experienced on the coasts of Aracan and Ava in the N. E. monsoon, the prevailing winds are from W. N. W. and N. W. in the day, and from northward in the night, seldom veering to N. E. It may, therefore, be preferable for a ship leaving Cheduba Road or Ramrie Harbour, to proceed to sea by the southern channel when the northerly winds prevail, and not lose time beating to

* That harbour and Cheduba Road, are visited by French privateers in time of war, where they refit, and get supplies of water and provisions.

the northward round the reef off the north end of Cheduba. The passage best known, is between Round Island to the westward and other islands near the coast to the eastward, and afterward to the south of Tree Island, which is situated in lat. 18° 26′ N., lon. 93° 45′ E., about 13 miles S. E. by S. from the South end of Cheduba, being the southernmost of a chain of islands and banks that stretch from the latter. Tree Island* is of circular form, about 1 or 1½ mile in diameter, with a small hill near the middle of it covered with trees; 1 of these is conspicuous, being higher than the others. From the East side of the island a spit projects, but it is steep to, on the other sides; on the bank a little to the northward of it, there are 6 and 7 fathoms rocky bottom, and to the eastward of it in the channel, from 15 to 20 fathoms.

Geo. site of Tree Island.

Between Tree Island and the others off the South end of Cheduba, there was thought formerly to be no safe passage over the coral bank, but H. M. sloop Trincomale, with the Sybille Frigate in company, left Cheduba Road, on the 15th of December, 1801, and proceeded to sea between Round Island and Ramrie, leaving Flat Island and the contiguous rocks near Cheduba to the northward, and Low Island and Tree Island, with the rocks and breakers near them, to the southward. After weighing from Cheduba Road, these ships steered to give a good birth to the sand projecting from Round Island to the northward, and had regular soundings mostly from 5 to 6½ fathoms in passing between Ramrie and Round Island, until betwixt the latter and Low Island, the bottom became uneven and composed of coarse sand and coral; there was, however, never less than 5 fathoms in passing between it and the rocks that lie off the South point of Flat Island, which ought to be borrowed upon pretty close in coming out by this channel, after passing Round Island.

To sail from Cheduba Road to the southward in that season; Islands and dangers

Passing out between the Islands in 7½ fathoms, the lat. observed at noon was 18° 34′ N. Tree Island bearing S. 28° E, outermost rock off Low Island S. 35° E., about 3 miles, centre of Low Island N. 55° E., South point of Flat Island W. 3° S. distance 2½ miles, N. E. point of the same N. 25° W., West point of Round Island N. 10° W., East point of the same N. 6° W., and the South point of Ramrie N. 26° E. When the breakers were distant 5 miles, on with Tree Island, bearing S. 52° E. had 16 fathoms, and deepened to 25 fathoms, when the West point of Cheduba bore N. 34° W., Pyramid N. 23½° W., Round Island N. 15° E., and Tree Island S. 67° E.

Nearly midway, in a direct line between Tree Island and Foul Island, which is about 7 leagues to the S. S. E. there is a rocky bank of coral, with 6 or 7 fathoms, or probably less water on it in some parts, from which Foul Island bears S. S. E. about 4 leagues. On either side of this bank, between it and the island last mentioned, or between it and Tree Island, there appear to be safe channels leading from the South entrance of Cheduba Strait to seaward. In the northernmost channel, the least water found has been 12 fathoms, with Tree Island bearing N. N. W. ¾ W. distant 7 or 8 miles.

## 4th. COAST OF AVA TO CAPE NEGRAIS, AND THE ISLANDS ADJACENT.

ON the main-land to the S. Eastward of Ramrie, a triple ridge of regular sloping mountains divides the coasts of Aracan and Ava; the latter coast extends in a southerly direction from thence to Cape Negrais, forming several bays destitute of shelter for ships, and having some groups of islets or dangers in its vicinity.

Coast of Ava.

FOUL ISLAND, in about lat. 18° 7′ N., bears from Tree Island, on the extremity of Cheduba Reef, nearly S. S. E. ¾ E. distant 7 leagues, and from the continent abreast about

Foul Island, and the coast between it and Cheduba Strait.

* It is sometimes called Foul Island, and by Captain Ritchie, Christmas Island; there are on it 2 pools of fresh water. The name given to this island by the natives of the coast, is said to be Negamalé.

4 or 5 leagues, bearing W. by N. ¼ N. from a bluff point, having a bay on its north side, at the bottom of which there appears the entrance of a river. Foul Island may be seen 8 leagues distant, and is 3 or 4 miles long, of conical form, with a gradual declivity from the centre toward the sea, the north end terminating in a low point, with a remarkable tree on it, and the whole of the island is covered with trees*. To the N. Eastward of Foul Island, there are other islands near the shore, with a reef of rocks partly above water, stretching southward from the outer or southernmost island about 1 or 1½ mile. Abreast of this reef, the depth at 2 miles distance is 20 fathoms; when to the northward of it, the shore may be approached to 16 fathoms, in coming from the south along the coast toward Cheduba Strait. The soundings between Foul Island and the main, are generally from 20 to 30 fathoms; within 3 miles of the point that bears E. by S. ¼ S. from it there is 21 fathoms, the bottom mostly mud, although in some parts it is hard sand, about 3 leagues off shore. About 3 and 4 leagues South from Foul Island, the depths are from 38 to 46 fathoms, and to the westward of it, at a few miles distance, they soon increase to 55 and 60 fathoms, and a little farther out there is no ground. Ships passing outside of this island in the night, should not come under 36 or 40 fathoms; nor under the same depths in passing outside of Cheduba, and the bank and islands projecting from it to the southward; for about 4 or 5 leagues to the westward of that island, the bank has a sudden declivity from 60 or 70 fathoms, to no ground.

Geo. site of Church Rocks,

CHURCH ROCKS, (called by Captain Ritchie, St. John's Rocks) in about lat. 17° 28′ N., lon. 94° 7′ E., bear from Foul Island nearly S. by E. ¼ E., distant 13½ leagues, and from the shore about 4 leagues; they are 4 in number, 1 of them large and high, the other 3 small, and lie near each other; when they bear about S. W., the large 1 resembles a country church with a square tower on its West end, from which they have been named. Very near these Rocks on the inside, the depths are 36 and 37 fathoms soft ground, decreasing regularly toward the shore, which seems safe to approach, but near it there are several rocks and islets. The coast between Foul Island and Church Rocks, may, in some places, be borrowed on to 15 or 16 fathoms in working, which will be about 2 miles off shore; the depths from 2 to 4 leagues off are 26 to 40 fathoms, increasing fast to the westward of the Church Rocks to no ground, therefore, a ship passing outside of them in the night, should keep in deep water, not coming under 50 or 60 fathoms.

And the coast betwixt them and Foul Island.

Calventura Rocks,

CALVENTURA† ROCKS, bear from Church Rocks nearly S. or S. ¼ E. distant about 11 or 12 leagues; they form 2 divisions, bearing from each other N. W. by W. and opposite, distant 5 or 6 miles, the body of them being in about lat. 16° 52′ N. The N. Westernmost division is a group of 7 black rocks, of different magnitudes and forms; 1 of them resembles an old church with a mutilated spire, another is much larger at the top than it is near the small base on which it stands. The S. Easternmost division consists of 2 high rocky islands, covered with trees and bushes; they are connected by a reef of rocks under water, having upon it a single rock above water, about half way between the islands. Between the Calventura Rocks and a sandy point on the main, there is a safe channel about 4 or 5 miles wide, said to have 20 and 22 fathoms soft ground in mid-channel, with 15 to 18 fathoms hard sand toward the rocks or the shore; about ¼ mile inside of the easternmost rock, there is 8 fathoms water.

* By some Navigators it has been called Tree Island, and by Mr. Newland, False Island. In his plan, an extensive bank, with different depths on it from 9 to 16 fathoms, is projected from the N. part of this island nearly to the islands off the S. end of Cheduba, but Captain Ritchie saw no appearance of shoal water, and had 23 fathoms very close to Foul Island, in coming from the northward and passing between it and the main.

The Generous Friends, on the 3d of November, 1803, shoaled suddenly from 14 to 7 fathoms water on a hard coral bank, Tree Island bearing S. S. E., and Foul Island N. W. ¼ N.

† Called Buffalo Rocks by Captain Ritchie, and the latter by him are called Calventura Rocks.

In passing along the coast from the Church Rocks to the southward, a ship may keep between 35 and 23 fathoms, and in the latter depth she will be about 4 miles off shore. From the sandy point abreast of the Calventuras, a rocky bank extends to the north ward about a mile, and about ½ a mile distant from the shore, having within it the appearance of a river. And from the sandy point about 4 miles to the northward, and 1 mile off shore, there is a sandy island with trees on it, and a remarkable rock on the beach to the southward. A ship passing betwixt the Calventuras and the main, should not in turning, borrow nearer to Sandy Island and Sandy Point than 13 fathoms, which is 2 or 2½ miles from the shore; and when the southernmost Calventuras bears nearly West, the main should not be approached under 16 fathoms, on account of a white rock, distant about a mile from the shore, with rocky bottom all round, and projecting from it about a mile to the westward, on the edge of which the water shoals from 15 soft, to 8 fathoms hard at a cast.

and the Coast described; to sail along it,

Ships which pass outside of the Calventura Rocks, ought to keep on the edge of soundings, and not come under 50 or 60 fathoms in the night, which will be but a small distance from the outermost rocks, there being 44 and 46 fathoms, when they bear East about 1½ mile.

or outside of those Rocks.

BUFFALO ROCKS, in lat. 16° 20′ to 16° 23′ N., lon. about 94° 12′ E., bear nearly S. ½ E. from the outermost Calventura Rocks, distant 10 or 11 leagues; they are a group of high rugged rocks, extending North and South, situated about 3 miles from the shore, and bearing North a little westerly from the western extremity of Cape Negrais. The coast between the Calventura and Buffalo Rocks, forms several bays, with islands fronting them and the shore; nearly midway, a reef projects from a small island about 1½ mile to the S. Westward, and a little farther northward there is a high rock, distant about a mile from the shore, to the northward of which, the coast may be approached to 16 fathoms; but from thence to the Buffalo Rocks, it should not be borrowed upon under 24 fathoms, particularly in passing the reef and small island.

Geo. site of the Buffalo's,

coast adjacent.

On the West side of the Buffalo Rocks the soundings are regular, 20 fathoms about a mile from them, and 50 or 60 fathoms at 5 leagues distance; but they should not, without great caution, be approached in the night.

CAPE NEGRAIS, in lat. 16° 2′ N., lon. 94° 13′ E., by chronometers and lunar observations, is the southwesternmost land of the coast of Ava, but the southernmost extremity of that coast is generally called PAGODA POINT, from a pagoda standing upon it, in lat. 15° 58′ N., bearing nearly S. E. from the former, distant 5 or 6 miles. Very near the point there is a large rock, and red cliffs stretch from it toward Cape Negrais, which are fronted by a reef, extending a considerable way out; this reef terminates at the North end of the red cliffs, and should not be approached under 8 or 9 fathoms in a large ship. To the northward of the red cliffs, the shore is more bold, there being from 11 to 12 fathoms soft ground within 2 or 3 miles of the cape.

Geo. site of Cape Negrais, and Pagoda Point.

AVA RIVER, called also Persaim and Basseen River, formed between Pagoda Point to the westward and Point Porian to the eastward, is navigable a great way inland: there are 2 channels that lead into it, 1 on each side of Negrais Island, and the western channel forms a good harbour betwixt that island and the West side of the river. The eastern channel is not so safe, for an extensive reef projects from the land about Point Porian to Diamond Island, and another reef projects from Negrais Island a great way to the S. West, nearly joining to the extremity of the former reef, and to Diamond Island. This river has generally been a place of resort for trading vessels from Coringa and other parts of the Coromandel coast; when Capt. Pope was here in 1788, there were 5 ships under English colours in the river. He came from Rangoon River, in a boat to Ava River, by an inland navigation like the Sunderbunds in Bengal.

Ava River, Negrais Island, the harbour, and contiguous coast.

Negrais Island, situated in the entrance of the river about 4 or 5 miles inside of Pagoda Point, and nearest to the western shore, is conspicuous by a hill on it, which is the eastern-most high land on the coast: Point Porian on the East side the river, being the first low land, and is covered with trees. The whole of the coast of Ava, from the extremity of the Aracan Mountains near Cheduba to Cape Negrais, is a continued ridge of scraggy land, tolerably high, broken into cliffs of reddish earth in many places, and generally with low trees or brush-wood upon it, without any signs of cultivation or inhabitants toward the sea.

General Remark.

To sail into the entrance of Ava River.

A ship intending to anchor under Pagoda Point, should bring it to bear N. E. ½ N. or N. E. by N., then steer for it; some hard casts of 6, or perhaps 5 fathoms, may be got on the tail of the sand that extends from Negrais Island, and when the Point bears from N. to N. W. about 1½ mile, she may anchor in 6 or 6½ fathoms mud. A ship going in for the harbour or channel between the island and western shore, should round Pagoda Point at the distance of ½ a mile in 6 or 6½ fathoms, but a little inside of the Point, the channel becomes more contracted, and the natives of the country being generally considered unfriendly to Europeans, this place is not so often visited as formerly, by English ships.

Geo. site of Diamond Island.

DIAMOND ISLAND, in lat. 15° 52′ N., lon. 94° 19′ E., by chronometers from Madras, and lunar observations, bears South a little easterly from Pagoda Point, distant 6 or 7 miles, and fronting the entrance of Ava River; it is low, covered with trees, about 1½ mile in extent, and may be seen about 5 leagues; but it should not be approached in a large vessel, on account of the reefs that surround it*.

Sunken Island.

SUNKEN ISLAND, or Drowned Island, called also La Guarda, bears from Diamond Island S. S. W. about 3½ leagues, the southern extremity of it being in lat. 15° 41′ N.; it is a very dangerous reef of rocks, level with the surface of the sea, extending N. E. and S. W. 1 mile or more, and it is very narrow; but there are detached rocks at a considerable distance from it, on some of which the sea breaks in bad weather.

Passage between it and Diamond Island is very dangerous.

Although in former directories, ships coming from the eastward were instructed to pass between Diamond Island and Sunken Island, this is certainly a very dangerous passage, and ought not to be adopted in any ship, except in a case of ***very great*** necessity. Some ships have passed through it in former times, but the exact limits of the reefs on each side, and the true situations of ***several*** other detached ***sunken*** rocks, are very imperfectly known; consequently, this channel is very unsafe. Several ships have struck upon the sunken rocks between Diamond and Sunken Islands; 1 of these was H. M. S. Exeter, in November, 1748; and the Company's ship Travers, bound to Bengal, was totally lost, at 5 A. M. on the 7th of November, 1808, on a rock bearing N. E. by N. from Sunken Island, distant about 1¼ mile; probably the same on which the Exeter struck. Ships which have passed between Diamond and Sunken Islands, have generally endeavoured to keep in 9 or 10 fathoms water, about 3 or 4 miles from the former, as a reef projects from it more than 2 miles to the S. and S. Westward; but the greatest dangers are probably near mid-way between the islands, for a sunken rock is thought to lie about 3 or 4 miles nearly S. by E. from Diamond Island, another about the same distance S. S. W. from it, in a direct line toward Sunken Island, and another to the S. Westward of it, about 2 leagues distance. It was probably on the latter, that H. M. S. Phæton struck, on the 16th of February, 1810, which obliged her to go Bengal to repair; and Capt. Pellew of the Phæton, thinks it is 6 or 7 miles to the S. Westward of Diamond Island, with 9 fathoms close to, and 9 feet water upon it, and is of small extent.

* At some seasons it is much frequented by turtle, but it is considered unhealthy and dangerous for people to sleep on shore, for H. M. S. Sybille lost several of her men which remained on shore during the night; those who were on the Island in the day time, and returned on board in the evening, escaped the fever that speedily terminated the lives of the former.

EXCLUSIVE OF THESE DANGERS, the bottom is chiefly uneven and rocky betwixt Diamond Island and Sunken Island, with a heavy, turbulent swell, occasioned by the sea beating upon the reefs, and the strong tides, which here set, the flood to the E. S. E. and the ebb to the W. N. W. The rise of tide is about 9 or 10 feet on the springs, and it flows to about 11½ hours on full and change of the moon. From the heavy confused swell that generally prevails in this dangerous channel, even during calm weather, it is often called the Race of Negrais, and certainly should be avoided by ships; for by rounding the South end of Sunken Island, they are but a few miles farther out, in a safe and spacious channel about 17 leagues wide, between it and the Island Preparis.

Tides in this passage strong, with a turbulent swell;

Channel outside of Sunken Isl. preferable.

When at times, the sea is smooth in the N. E. monsoon, the breakers on Sunken Island are not high, but when the weather is clear, the approach to it may always be known by the bearings of the land; for when the West end of Diamond Island is coming into contact with the East end of the hill on Negrais Island, Sunken Island is then in the same direction bearing N. N. E., and the western extreme of Cape Negrais will bear nearly North. At 4 or 5 miles distance from Sunken Island, both to the eastward and westward, the depths are generally from 15 to 17 or 18 fathoms blue mud, and to the southward of it, at the same distance, 19 and 20 fathoms. It is prudent not to approach Sunken Island nearer than 2 leagues on the East side, nor under 3 leagues on the N. W. side, on account of the rock situated to the S. Westward of Diamond Island, mentioned above. About 4 or 5 leagues to the westward, the bank shelves suddenly to no ground, but soundings extend from Sunken Island to Preparis, and the depths increase to 40 and 50 fathoms in the track between them; near to Preparis Island they are irregular in some places, but on the East side of the Island, decrease to 8 fathoms within less than a mile of the shore, where there is a pool of fresh water.

Marks to know when near that Island.

SHIPS BOUND TO BENGAL IN THE N. E. MONSOON, should not keep within sight of the coasts of Ava and Aracan, which was formerly considered indispensible to secure the passage; but experience shews, that northerly or light winds prevail greatly on these coasts, and the current sets often to the southward, rendering the progress at times very slow; it therefore, happens, that coppered ships which keep out in the open sea, at a reasonable distance from the land, generally make the best passages up the bay in this monsoon. Ships which sail indifferently, or being short of water, intending to adopt the passage along the coasts of Ava and Aracan, ought to keep well in with the shore where it is safe to approach, that they may benefit by the breezes from the land, when these are found to prevail; and also to preserve moderate depths for anchoring, when it falls calm, with the current unfavorable.

Ships bound to Bengal, should not keep close to the coast of Ava, &c.

Severe storms are liable to happen at the setting in of the N. E. monsoon, and at times in the S. W. monsoon. On the 12th of November, 1797, the Company's ship Minerva, had a hurricane from the eastward, off Chedùba, which blew away all her sails, broke the topmasts, washed an anchor and some casks from her gunwalls and waist, and obliged them to cut away some of the boats. Many other ships have been dismasted, or suffered damage, in October or November, near the coasts of Aracan or Ava.

## *COAST of PEGU; DIRECTIONS for SAILING to, and from RANGOON RIVER.*

COAST OF PEGU, extends from Ava River to the Gulf of Martaban, and is generally low and woody, intersected by many rivers, with reefs and shoal water extending along it

Coast of Pegu, dangerous in the S. W. monsoon.

to a considerable distance; it is therefore, a dangerous coast in the S. W. monsoon, for the tides set strong, and a ship might run aground in some places before the land could be perceived.

Description of that coast, and the reefs contiguous.

From the entrance of Ava River, the direction of the coast is to S. Eastward 6 or 7 leagues, which part is generally considered as Porian Island, and the whole of it is fronted by Porian Reef, projecting 2 or $2\frac{1}{2}$ leagues from the shore in some places, with hard ground close to it, 6 or $6\frac{1}{2}$ fathoms. When 22 miles East from Diamond Island by chronometer in lat. 15° 40′ N., a ship will have $6\frac{1}{2}$ fathoms on the edge of the Reef, a low point then bearing N. 37° E. distant 8 or 9 miles. From hence, the coast stretches E. by S. and East 12 or 14 leagues to Baragu River, but the Reef takes a more southerly direction in some places, where it projects $3\frac{1}{2}$ and 4 leagues from the shore; about 14 leagues eastward from Diamond Island, and from thence to about 25 leagues East from the same island, the Reef extends farther to the southward than at any other part of the coast, the lat. of its southern verge being here, about 15° 35′ N., where it extends from the land 4 and 5 leagues abreast of Baragu and Dalla Rivers. It is dangerous and steep to, and from 7 to 3 fathoms the distance is not more than $\frac{1}{2}$ a mile, perhaps much less in some places.

Coast from Dalla river.

FROM DALLA RIVER, the coast changes in its direction, and stretches nearly N. E. to the entrance of Rangoon River about 20 or 22 leagues, having reefs and shoal banks as before, projecting out from it 3 or 4 leagues, which should not be approached under 5 or 6 fathoms. The whole of this space is low land, intersected by many rivers and creeks, which form numerous islands; the best guide in approaching it is the soundings, for near the verge of the reef abreast of Baragu Point and farther westward, the bottom is generally sand and shells, or hard and stony; between Dalla River and Rangoon Bar, it is mostly soft ouze; and to the eastward of the bar, it is in general stiff mud.

Exclusive of the quality of soundings, in clear weather the following land marks may be seen, which will point out the entrance of Rangoon River. The first that will be discerned in coming from the S. W. is a grove of trees about 5 or 6 leagues to the S. Westward of Rangoon River, called China Buckeer, which in some views resembles a quoin, but it is not seen until a ship get into 6 fathoms water; in approaching it from sea, bearing about North, it will be seen from the masthead appearing like a small island, and the lat. will then be about 16° 10′ N. China Buckeer, is the mark that ships bound for Rangoon River first endeavour to see, to prevent being carried past their port to the N. Eastward by the flood tide.

Rangoon River.

RANGOON RIVER, called also Sirian, and Pegu River, is the only place on this coast frequented by ships belonging to European merchants; on the bar leading to it there is 2 or $2\frac{1}{4}$ fathoms, and a steep bank on the East side dry at low water. This river may be easily known by the clump of cocoa-nut trees called the Elephant, or Western Grove, situated on the point of land that bounds the West side of the entrance, which, with a little help of the imagination, does somewhat resemble that animal. A little way from it there are 3 palmira trees on a small rising ground, and a few more between them and the point.

Geo. site of Elephant.

The Elephant, by Captain Heywood's observations, is in lat. 16° 29′ N., lon. 96° 25′ E., or 2° 6′ E. from Diamond Island, by chronometer. On the East side of the entrance the trees grow thicker together, and are called sometimes the Eastern Grove; here, they are more even at top, and not so high as those on the West side, and what is very remarkable, on the N. E. side of the river, there is not *one* palmira tree *between the N. E. point* and a *small mount* or hillock in shore, which shews itself above the trees; although from that mount to the eastward, there are many growing at some distance from each other, all nearly double the height of the other trees which surround them.

TIDES ON THE COAST OF PEGU, generally run very strong, the flood sets East and E. by N., and the ebb in the contrary direction, to the westward of Baragu Point; but from that point to Rangoon Bar, the flood sets N. E. and N. E. by N., and the ebb to the S. W.; farther East, between Rangoon River and the coast of Martaban, the flood runs N. N. E. and N. by E., strong into the bottom of the gulf, and the ebb equally strong out of it, in the opposite direction. When the rivers are swelled, and the low country inundated by the rains at the end of the S. W. monsoon, the ebb tides are much stronger and run longer than the flood tides, occasioned by freshes from the rivers; the water then, is very thick and muddy at a considerable distance from the land, which is more or less the case on this coast at all times, opposite to the numerous rivers that disembogue into the sea. Tides.

Abreast of Baragu Point, and farther westward, the velocity of the tides is not near so great as off Rangoon River and in the bottom of the gulf; for here, it is frequently in the springs 4 and 5 miles an hour, and sometimes more, near the edges of the shoal banks. After the rains, the tides off Rangoon River are subject to a circular motion, the first of the flood sets East, changing gradually to N. E. about ½ flood, and to North in the latter part. The ebb sets just the reverse, beginning to run West, it changes gradually to S. W. and South, ending at S. E., but there is no slack water at these times, the tides continuing to run 1½ or 2 knots when changing from the flood to the ebb, and the same at the opposite change.

On the West part of the coast, off Porian Reef, the perpendicular rise and fall of the tide is only 9 or 10 feet on the springs, but off Rangoon Bar it is frequently 20 or 21 feet, and from 21 to 24 feet farther to the eastward in the bottom of the gulf, near the banks at the entrance of Sittang River; it is, therefore, proper, to be careful in making free with this part of the coast, and to acquire a knowledge of the tides in order to prevent any mistake, by anchoring near high water in a situation where a ship would be aground at low water.* It is high water on Rangoon Bar about 3 hours at full and change of the moon.

SHIPS BOUND TO RANGOON from Bengal in the N. E. monsoon, should make Cape Negrais, and pass round to the southward of Sunken Island; those which come from Madras or other parts of the Coromandel coast in the same season, after beating across the bay, may pass through the channel between it and Preparis, or betweeen the latter and Coco's Islands, as may be most convenient. In this season, from October to February, it is prudent after passing Sunken Island to steer to the eastward for Baragu Point, endeavouring to keep well in with the coast, for at times there is very little flood, the freshes from the rivers frequently producing a constant current setting to S. W., and round to N. W. Directions to sail from westward to Rangoon Bar in the N. E. monsoon.

Should a ship fall in with the land to the westward of Baragu Point, the water will shoal quickly from 20 to 16 and 10 fathoms toward the edge of the reef; and in a large ship, it would be imprudent to borrow under 9 or 10 fathoms, for in some places the edge of the reef takes a S. Easterly direction, and is steep from 6 to 3 or 3½ fathoms, when the low land is hardly discernible.

Soundings extend a great way out from this coast, there being 43 and 44 fathoms about 24 leagues South from Baragu Point, in lat. 14° 30′ N.; and from thence, soundings continue on the same parallel to the coast of Martaban.

If not affected by lateral tides, the depth will decrease in steering East, when a ship is to the westward of Baragu Point; steering the same course, it will decrease when she is to the

* Captain P. Heywood, in H. M. sloop Trincomale, on the 19th of November, 1801, anchored in 5¾ fathoms at high water, and had only 13 feet at low water, with the Elephant trees bearing N. 36° W. about 5 leagues—westernmost extreme of the land N. 78° W.—A remarkable mount on the East side of Rangoon River N. 22½° W.—N. E. extreme N. 49° E.—Martaban Hills E. N. E. This was the day preceding full moon, and the water seems to have been very shoal at 5 leagues distance from the land, but the place where this ship anchored with these bearings, was probably to the eastward of the fair channel leading to the river.

eastward of that point, and she may then steer to the N. Eastward if the wind permit, borrowing to 7 or 8 fathoms toward the edges of the banks that line the coast. Should the wind be far eastward, rendering it necessary to tack at times, the coast may be approached to $6\frac{1}{2}$ and 7 fathoms, or nearer occasionally, when to the eastward of Baragu Point and Dalla River; the soundings over a soft bottom being then more regular, and the banks not so steep as they are to the westward. On approaching Rangoon River, a ship should haul in to get a sight of the land, and make it in lat. about 16° 10′ N.; China Buckeer may then be seen appearing like a low island, if the depth is not above 6 fathoms, and will probably bear N. by W. $\frac{1}{2}$ W., or N. N. W. but it cannot be discerned when the depth of water is more than $5\frac{3}{4}$ or 6 fathoms. After passing China Buckeer, the coast may be approached occasionally, in a small ship, to $3\frac{3}{4}$ or 4 fathoms at low water, or to 6 fathoms at high water; the Elephant will soon be perceived, and when it bears N. by W., the Eastern Grove on the opposite side of the river may be seen bearing to the eastward of North; it will then be proper to anchor, and make the signal for a pilot, or dispatch a boat with an officer into the river for one, if the weather is favorable.

Should the land not be seen when a ship gets into shoal water, the bottom be stiff mud, and the tides found to set N. N. E. or N. by E. and opposite: she will, in such case, be to the eastward of the bar, and must haul to the westward with the ebb until the bottom is soft, and the tides be found to set more to the N. E. and S. Westward; she ought then to steer in for the land, and endeavour to get sight of the Elephant and Eastern Grove, where she may anchor off the bar, and wait for a pilot.

Or from the southward.

Ships bound to Rangoon, from Malacca Strait, Achen, or the Nicobar Islands, in the N. E. monsoon, should endeavour to pass in sight of the westernmost islands of the Mergui Archipelago, and from thence to the northward in a direct line for the entrance of Rangoon River. Should circumstances render it necessary at a ship's arrival there, to venture over the bar without a pilot, the best track is to bring the 2 points that form the entrance of the river, a little open, and steer in with them open about a ship's length, observing to keep in the western side of the channel, which is less dangerous than the opposite side. In proceeding to cross the bar, it ought not to be attempted before half flood, for the first of the flood sets strong to the eastward upon the Middle Ground Shoal, situated on the East side of the channel, which close to, has deep water and irregular soundings. If Ental Point, on the East side of the river, open fast with the western point of the same, a ship ought to anchor until the tide set fair into the river, which is after half flood, and that is the most favorable time to cross the bar. Coming from the S. W., when the Elephant is brought to bear N. by W., a ship ought to haul up for the channel leading to the bar; and it may be observed, that if Ental Point is kept open with the western point of the river's entrance, she will not ground on the West side of the channel, which is preferable to the opposite side. When within the bar, and abreast of the Elephant or Western Grove, the water will deepen to 6 or 7 fathoms; by keeping that shore aboard, the channel is wide and free from danger, nearly to the distance of 3 leagues up the river.

To proceed over the bar into the river.

Although the pilots have sometimes got ships upon the Middle Ground, yet, if unacquainted, it would be imprudent to attempt to cross over the bar without one, particularly in a vessel of considerable burthen, unless in a case of necessity.

The town.

RANGOON TOWN, situated on a considerable branch of the principal river that extends to the westward, is about 7 or 8 leagues to the northward of the bar, and is a place of considerable trade. The country abounds with straight teak timber,* some of which is

* The forests of large *straight* Teak, are situated on the low country in the vicinity of the rivers; the trees are cut down in the dry season, and when the low country is inundated by the swelling of the rivers during the rains, the felled trees are conducted to the river and floated down in large rafts to Rangoon. In the hilly country, there is *probably* plenty of *crooked* teak timber for ship building, but the inconvenience of getting it to the rivers, has hitherto proved an obstacle too great for the natives to attempt bringing any of it to Rangoon.

exported to Calcutta and other parts of India for ship building, and there are many ships of various dimensions built at Rangoon, although the crooked timber here is not very durable, and far inferior to that used on the Malabar coast for ship building. Rice, poultry, hogs, fruits, and vegetables, and other articles of refreshment, may be procured in abundance and at reasonable prices. Wood oil, earth oil, wax, dammer, and other articles are exported from hence. Refreshments

If bound to Rangoon from Bengal in the S. W. monsoon, a ship should endeavour to make the Island Preparis, or rather the Cocos Islands if the wind permit; and after passing through either channel as most eligible, a course ought to be steered to fall in with the coast of Pegu about China Buckeer, or little to westward of Rangoon Bar. A ship from Madras or any other part of the Coromandel coast in the same season, ought to make Landfall Island at the North end of the Great Andaman if the wind is far southerly, or the Cocos Islands if it is at westward, then pass through the channel between them. From the Cocos Channel, she may steer about East to get a sight of Narcondam if the weather is clear, and then to the N. Eastward, for the land on the West side of Rangoon Bar. If by accident she should get to the eastward of the bar a few leagues, Martaban Hills will be seen if the weather is clear; and in such case, she must work to the westward with the ebb tide. To sail from the westward to Rangoon Bar in the S. W. monsoon.

Ships bound to Rangoon, from the Nicobars, Achen, or Malacca Strait, in the S. W. monsoon, ought to make the Island Narcondam, and from thence steer as before directed, to fall in with the land a little to the westward of the bar. All ships approaching the coast of Pegu in this season, ought to be well provided with ground tackle, for the weather is often dark and squally, preventing the land from being seen, and it would be (generally speaking) imprudent to borrow under 6 fathoms until some part of the coast is discerned and the situation known; ships are, therefore, necessitated at times, to ride at anchor during strong gales on the springs when the tides are very rapid; this ought to be done in 7¼ or 8 fathoms water at least, and not in shoal water near the banks which bound the coast. And from the southward in the same season.

DEPARTING FROM RANGOON RIVER in the N. E. monsoon, ships bound to Bengal, should steer when clear of the bar, to pass at a moderate distance outside of the shoals that stretch from the coast, then to the southward of Sunken Island; afterward, they may keep at a reasonable distance from the coasts of Ava and Aracan, in proceeding toward the River Hoogly. Those bound to Madras or other parts of the Coromandel coast, may at discretion, pass through any of the channels between Sunken Island and Landfall Island at the North end of the Great Andaman, and then steer direct for their port, observing to fall in to the northward of it before February, and afterward, to the southward. Ships in the same season bound to Malacca Strait, ought to make the South end of Junkseylon; and if bound to Achen or the Nicobar Islands, a direct course may be pursued to the place of destination. To sail from Rangoon Bar in the N. E. monsoon.

DEPARTING FROM RANGOON RIVER in the S. W. monsoon, it is proper to work to the westward along the coast as far as Baragu Point, before a ship stand out into the open sea, whether she be bound for Bengal, the Coromandel coast, Achen, or Malacca Strait. In coming out of the river, the pilot should not be permitted to take leave until the ship is well out, with the Elephant bearing N. by W. and in 5 fathoms water, unless those on board are well acquainted with the coast, and the exact situation known. In 5 fathoms with the Elephant N. by W., she will be near mid-channel; stretching from thence to sea, the water will soon shoal to 4½ fathoms, then she should tack and stand in shore to 6 fathoms and again tack, for the *increase* of depth, denotes the appproach to the in-shore dangers. Directions for sailing from it in the S. W. monsoon.

When China Buckeer is brought to bear W. by S., longer tacks to seaward may be made at discretion, but it is advisable to keep near the coast, anchoring occasionally, and taking advantage of the tides, which run very strong. When in 5½ fathoms near low water, with China Buckeer bearing W. by N. 4 or 5 leagues, it may be seen appearing like a small Island in the form of a quoin, and very little of any other part of the coast will then be dis-

cernible. Should it be night before a ship is abreast of China Buckeer, she ought with the ebb, be permitted to drive to windward under staysails, and the lead carefully attended to, that her situation may be known. The approach toward the shore will be shewn by the lead, the soundings being regular until a small patch of land called *False* China Buckeer is bearing N. N. W., or until the opening of Dalla River is abreast. Having got this far, the coast should not be borrowed on nearer than 7 or 8 fathoms; the soundings will be ouze throughout until Dalla River is passed, then sand and shells, which is a certain sign of the approach to Baragu Point. From this point, ships which sail well, if bound to Bengal, may continue to work to the westward, and pass between the Coco's and Preparis Islands, or close under lee of the latter; and from thence, if the wind keep between S. W. and S. S. W., they will probably reach Balasore road without tacking; otherwise, they must endeavour to get to the westward, by taking every advantage to tack with the favorable shifts.

Ships bound to Madras, will find it tedious and difficult to beat across the bay from the coast of Pegu during the S. W. monsoon, and those that sail indifferently, will find it impracticable; it therefore, seems advisable, for them to pursue the same route as if bound to Achen. After working 1 or 2 tides works to the westward of Baragu Point, a ship bound to Madras, or any port on the Coromandel coast, to Achen, or Malacca Strait, may stand out to sea if the wind is well to the westward, and endeavour to pass near the Island Narcondam; in proceeding to the southward, care is requisite to tack occasionally, and keep well to the westward of the Archipelago of Islands fronting the coast of Tanasserim, which are little known, and form a lee shore, although between several of them there are safe channels. If bound into Malacca Strait, after rounding the South end of Junkseylon, a direct course may be steered for Prince of Wales' Island, but a ship bound for Achen, ought to keep well to the west, toward the Nicobar Islands, if that can be conveniently done; otherwise, she may stand close upon a wind to the southward and make the coast of Pedir, where a favorable current will be found setting to the westward, which will soon carry her to Achen. At this place she ought to fill up her water, if bound to the Coromandel coast or to Ceylon, then proceed through the Surat passage, or close round the North end of Pulo Brasse to sea, as circumstances render convenient. When out in the open sea, every advantage should be taken to get to the S. Westward, and an indifferent sailing ship will probably have to proceed several degrees south of the equator, before she can obtain westing sufficient to reach her port with safety. Ships that sail well upon a wind may make a more direct passage from Achen to the Coromandel coast, which has sometimes been accomplished in less than 3 weeks during the strength of the S. W. monsoon, although a much longer time is often required to perform it.

Sittang River

SITTANG RIVER, about 10 or 11 leagues E. N. Eastward from Rangoon bar, is the easternmost and principal branch of Pegu River, being much wider than the other generally called Rangoon River; but it is unfrequented, and little known to Europeans. This river forms a natural division between the low coasts of Pegu, and the high land called Martaban Hills, by falling into the bottom of the Gulf of Martaban.

## *COASTS of MARTABAN, TAVAY, and MERGUI; with SAILING DIRECTIONS.*

Martaban Hills.

MARTABAN HILLS, bounding the east side of the entrance of Sittang River, are distant from the mouth of Rangoon River about 17 leagues, and bear from it due East.

To the southward of these hills, the High Island Buga fronts the entrance of Martaban River, on the North side of which is situated the town of Martaban, in lat. 16° 28′ N. The proper channel leading to it is to the eastward of the island; between this and the main, having a bar at the entrance, with a reef of rocks projecting from the shore at the foot of the Quekmi Mountains, where there is a pagoda and an island. The distance from the bar to the town of Martaban is about 7 leagues, but the depths in the channel are seldom more than 2 or 3 fathoms, and probably the natives are not friendly toward Europeans; for this place is not frequented by navigators, consequently little known. River, town, and coast adjacent.

From Martaban Hills at the entrance of Sittang River, the coast extends nearly S. by E. ½ E. to Tavay Point, the distance about 60 leagues, agreeably to the observations of Capt. P. Heywood, who passed along it in H. M. sloop Trincomale in 1801. The whole of the coast appeared to be a chain of high islands, having inside of several of them, *probably* safe channels and excellent harbours for ships, although no part of this coast has yet been explored. In lat. 14½° N., the islands lie farther out than at any other part of the coast, having soundings of 22 to 28 fathoms about 4 and 5 leagues to the West and S. Westward; but farther to the North, the depths decrease to 12 fathoms at the distance of 7 or 8 leagues from the land, and at the distance of 10 leagues from it in lat. 16° N. there is only 7 or 7½ fathoms at low water. In lat. 15° N. about 3 leagues off shore, there is said to be a shoal, having close to it 10 fathoms water. The coast to Tavay Point.

TAVAY POINT, in lat. 13° 33′ N., lon. 98° 6′ E., or 3° 47′ East from Diamond Island by chronometer, forms the West side of Tavay River's entrance. It is moderately high, bluff, covered with trees, and may be easily known by the Cap, a small round bushy islet, bearing from it W. 8° S. distant about 1¼ mile; and about 6 leagues to the N. W. of it, there is a group of Islands called Musco's Islands, distant 3 leagues from the shore opposite and nearest to them; they are steep, having 20 or 24 fathoms close to, on their West side. Inside of Tavay Point, there is good anchorage over a soft even bottom; a large ship need not bring it to the southward of S. W. by S., where she may anchor in 6 fathoms; a small ship of light draught, may go in much farther. His Majesty's sloop Trincomale moored in 5 fathoms at high water, and 3¼ fathoms at low water, and had the outer part of Tavay Point bearing S. 2° W. the watering place S. 51½° W., North point of the bay on with Button Island N. 15° E., West point of White Reef N. 19° E., Reef Island N. 25° E. to N. 37° E., Tavay Island S. 11° E. to S. 17° E., off the nearest shore by measured base and angles, 953 fathoms. Geo. site. Anchorage.

This place is convenient for wooding and watering*: the water is filled at a small brook, a little way round to the northward of the point, and near a rocky islet which is not more than 10 or 12 yards from the shore. About 2 miles to the northward of the watering place lies the mouth of a salt water creek, abounding with alligators; they are so numerous, that none of the people belonging to ships should be permitted to bathe either along-side or near the beach. There is seldom any of the natives seen at Point Tavay, the principal town being 8 or 9 leagues up the river in a N. by E. direction; there are in it many islands and banks, with various depths in the channels from 1½ to 4 fathoms, but it is not now visited by trading ships. Watering place.

Ships going into the anchorage under Point Tavay to procure wood or water, may with a leading wind steer toward the Cap, and pass it at any convenient distance; the soundings will be found regularly to decrease from the offing to 17 fathoms close to the Cap, and they will carry the same depth, nearly until Point Tavay bears N. N. E.; then Reef Island up the harbour begins to open, and the depth will decrease to 10 or 9 fathoms as they haul round to the northward. When the Cap is shut in with the point, there is 7 or 8 fathoms Directions for proceeding to the anchorage

* In time of war, it is much frequented by French Privateers, when they are in want of these necessary articles.

at the distance of a mile from the shore, and when the latter bears S. W. ½ S. or S. W. by S., they may anchor near it in 6 fathoms at high water. The tides are not very regular, but flow about 10 hours on full and change of the moon, and rise 13 or 14 feet.

Tavay Island. TAVAY ISLAND, the North end, bears from the point of the same name about S. by E., distant 16 or 17 miles, and is of middling height, about 5 or 6 leagues in length, stretching N. by W. and S. by E. It is the northernmost large island of that extensive chain which fronts the coast, generally called Mergui, or Tanasserim Archipelago; which with the whole of this coast, has never been regularly surveyed, consequently very imperfectly known.

Geo. site of Mergui. MERGUI, in about lat. 12° 12′ N.,* lon. 98° 24′ E. by lunar observations, and chronometer, measured from Prince of Wales's Island, is situated at the entrance of the principal branch of Tanasserim River, and is a port of considerable trade; it is, however, seldom visited by English navigators, for with them the government is *in general*, not inclined to enter into friendly intercourse.

To sail towards it in the S. W. monsoon. Ships bound from the Coromandel coast or Ceylon, to Mergui in the S. W. monsoon, ought to pass through the channel between the South end of Little Andaman and the Carnicobar Islands, or between the Little and Great Andamans if they fall to leeward of the former. Those which come from Bengal in the same season, may pass through the channels on either side of the Cocos Islands, between them and the North end of Great Andaman, or between them and Preparis; and after passing near Narcondam, they should steer for the Island Tanasserim situated in about lat. 12° 36′ N., lon. 97° 30′ E., distant from Mergui about 18 leagues to the W. N. Westward. The same island should be made by ships which pass to the southward of the Andamans. After leaving Narcondam, soundings will soon be got in steering for the islands off Mergui, when they are nearly approached.

Geo. site of Tanasserim.

To sail towards Mergui in the N. E. monsoon. Ships bound from Bengal to Mergui during the whole of the N. E. monsoon, may pass through the channel formed between Sunken Island and Preparis, then steer to make Tavay Islands or the Moscos Islands to the N. W. of Tavay Point, if the wind blow steady from the northward; they may then pass inside of Tavay Island in proceeding toward Mergui, or to the westward of that island, betwixt the islets off it, and the Canisters, and afterward betwixt it and Iron Island.

In the strength of the N. E. monsoon, ships from the Coromandel coast should also endeavour to pass to the northward of the Andamans, and from thence take every advantage to get to the eastward.

The islands composing the Mergui Archipelago are generally high, and may be seen from 10 to 15 leagues; the bank of soundings extends a little way beyond the outermost islands, by which the approach to them may be known in the night, if the lead is kept going.

To sail through the channels amongst the islands In coming from sea, Tanasserim Island when first perceived, makes in several hills appearing like separate islands, which on a nearer view, are found to join. To the northward and southward of it, several islands appear of different sizes; of these, the most remarkable is the Western Canister in lat. 12° 40′ N., a high, steep, small round island, about 2 or 3 leagues to the N. Westward of Tanasserim, by which it may be easily known. About 2 leagues N. E. by E. from the Western Canister lies Cabossa, in lat. 12° 46′ N., lon. 97° 29′ E., a middling high island, having a small islet or rock near it on the North side, and near the Western Canister are other islets. In coming from the southward these islands may be easily known, as no others are seen to the north of Cabossa, for it is the northernmost of this range.

Geo. site of Cabossa.

* Some navigators place it several miles to the northward.

A ship having made this latter island, may pass to the northward, or between it and the Western Canister at discretion, then steer to the eastward in soundings from 30 to 35 fathoms; as the tides set very irregular amongst these islands, they require attention; off Cabossa it is high water about 8 hours on full and change of moon. Having passed Cabossa, the Little Canister, a high, steep, round island, covered with trees, will be seen directly to the eastward, distant about 8 leagues; it resembles the Western Canister, excepting that the North end of the latter slopes more gradually than its southern one, and forms a kind of snout. The Little Canister is bold and steep to, and may be passed on either side as most convenient, but about 3 leagues S. W. by S. from it there is said to be a rock even with the surface of the sea. The Great Canister, a high irregular island of middling size, bears from the former N. ½ W. distant about 2 leagues, and is also safe to approach.

Having passed the Little Canister, a ship ought to steer East from it, between the South point of Tavay and the North end of Iron Island, in a channel about 2 leagues wide, and clear of danger; but the bottom in it being rocky, and the depths great, from 50 to 60 fathoms, with strong eddies at times, anchoring here is unsafe. Farther out, with the Little Canister bearing W. N. W. 2 leagues, there is 35 fathoms gravel and mud, and between it and Cabossa Island, the depths are generally from 35 to 22 fathoms, where a ship may anchor occasionally.

The North part of Iron Island, terminates in a point with rocks above water, having close to them 25 to 30 fathoms water. From it N. ½ W. lies the South part of Tavay Island, formed by several islets and rocks, also steep to. After passing in mid-channel between these, Long Island will be seen bearing E. by S., extending nearly North and South on the edge of a rocky bank under water, that lines the coast from Tavay River's mouth to the entrance of Mergui River. The edge of this bank, or Long Island, need not be approached, but when round the North point of Iron Island, it is best to steer along its eastern side at 2 miles distance, toward King's Island bay, which bears to the S. S. E.; and the depths will be various from 36 to 17 fathoms, decreasing toward the bank lining the coast.

There is also a channel between Iron Island and King's Island, destitute of good anchorage, the water being deep, with strong tides running in eddies; if the tide fail a ship in steering from Cabossa toward this channel, she should anchor as near to Iron Island as convenient, until the first of next flood; in entering the channel, she must keep nearest to Iron Island until past the islets and rocks that stretch out from King's Island, the outermost islet being very low and surrounded by rocks. Although this channel is safe with a steady commanding breeze, that to the northward of Iron Island ought to be preferred.

KING'S ISLAND BAY, formed between the island of this name and Plantain Island, (2 large islands that bound the West side of the channel leading to Mergui River) is a place of shelter for ships, but in entering it, care is requisite to avoid the Ly's Shoal, on which the French ship le Ly's touched in 1724. It bears N. N. E. about 1½ or 2 miles from the East point of King's Island, which is the North point of the bay, and it is a reef of rocks extending about a cable's length W. N. W. and E. S. E., with 19 feet on the shoalest part at high water, and only 9 feet at low water. When on it, the point of King's Island and a small islet were in one, and Panella Island on with the highest part of the N. W. point of Plantain Island, and the northernmost of the small islands betwixt Iron and King's Islands, was open about a sail's breadth from the North point of the latter. Near this shoal on the North side, the depths are 7, 10, and 15 fathoms in going from it; proceeding from it toward the point of King's Island, 6, 7, 10, and 12 fathoms; and toward Plantain Island, 6, 7, and 9 fathoms rocky ground about a cable's length off Panella, which is a small islet upon a sand bank with some trees on it, situated a little way from the N. W. point of Plantain Island, and appears as part of it when seen at a distance. To the east-

To sail into King's Island Bay.

ward, almost joining to the islet, there is another sand bank; and a reef of rocks stretches to the S. W., part of it only visible at low water.

To enter King's Island Bay, a ship must keep the N. E. side of King's Island a league distant, by steering to the eastward until the bay is open, and 2 small islands at the bottom of it are visible; she may then enter, leaving the Ly's Shoal on the starboard, and Panella Islet on the larboard hand. She will pass the latter safely, provided care is taken to avoid the reef of rocks that projects to the S. W. toward the bay, for the sea seldom breaks on it, and she may be horsed toward the rocks by the turn of the tides; but the channel between the Ly's Shoal and these rocks is wide enough to pass through in safety, with proper care.

When clear of the Ly's Shoal, she must steer westward into the bay, and anchor under King's Island, opposite to a small bay into which runs a stream of excellent water, with the N. E. point of the island North or N. by W. $1\frac{1}{2}$ mile, the northwest point of Plantain Island E. $\frac{3}{4}$ S., and Long Island N. by E. $\frac{1}{2}$ E.

The bay, to the southward of the anchorage is shoal, and the small creek that separates Plantain and King's Islands, is only passable in country boats. The tide rises here about 10 or 12 feet, and it is high water about 10 hours on full and change of the moon. King's Island, and most of the others are inhabited; it is infested by tigers and snakes, and on it and the other islands, there is plenty of large straight timber fit for masts, and several parts of ship building.

If by a change of wind or tide, a ship is obliged to enter King's Island bay by the channel between the N. E. part of that island and Ly's Shoal, which is at most $\frac{1}{2}$ a league wide, she must keep within $\frac{1}{2}$ or $\frac{3}{4}$ of a mile of the shore, before she begin to approach the N. E. point of the island, taking care not to incline to open the bay until she is within that distance of the shore; for if steering in with the point and small islet at the bottom of the bay in one, she would run directly upon the shoal.

In going out of the bay, the best track is to keep mid-channel between the N. E. point of King's Island and Panella islet, without borrowing to the westward until past the shoal, which will be known when the second islet or rock between King's Island and Iron Island is opened with the North end of the former.

Proceeding out by the Little Passage, a ship must steer along King's Island, rounding the point that forms the bay about $\frac{1}{2}$ a mile distance.

And from thence to Merguf Road.

MERGUI ANCHORAGE, off the entrance of the river, is about 5 leagues to the S. E. of King's Island bay; a ship being abreast of the latter place and bound to the anchorage at Mergui, should pass the N. E. point of Plantain Island at 2 miles distance; then to keep in mid-channel, the Little Canister must be kept open with the South point of Iron Island, and almost shut in by the North point of Plantain Island; the soundings will be soft, decreasing from 15 to 13, 12, 9 and 8 fathoms. The best anchorage for large ships, is in $6\frac{1}{2}$ fathoms at low water, with the North point of Plantation Island on with the South part of the Little Canister, the South point of Iron Island N. W., open about 10° from the Little Canister, the northernmost part of Madramacan Island (which forms the S. W. side of the river's entrance) S. 3° E. distant 3 or 4 miles, and the point on the East side of the entrance S. by E. Here, it is high water about $11\frac{1}{2}$ hours at full and change of moon, and the rise of tide is 14 or 15 feet.

The distance is about 2 leagues from the road to the town of Mergui; vessels of moderate size, by taking pilots, can go over the bar into the river, and anchor off the town in 5 fathoms water. Bullocks are not sold here, but all other necessary refreshments may be obtained, by making some presents, and entering into a proper understanding with the chiefs. Elephants teeth, wax, wood oil, and other articles, are exported from hence in ships belonging to merchants that reside here, who in general are natives of Hindoostan. Water

may be had in great plenty from a run on Madramacan Island, also on Plantain Island, and in King's Island bay.

In sailing from the road, a ship should observe the same marks as in entering, that is, to keep the Little Canister just open from the North point of Plantain Island, and pass the point at 2 miles distance, then keep the Little Canister a little open with the South point of Iron Island; and when abreast of King's Island bay, she may as seems most convenient, go out either to the northward or southward of Iron Island.

To avoid the dangers on both sides of the channel, when sailing to, or from Mergui Road with a contrary wind, a ship may from the entrance of King's Island bay to the small island about half way from thence to Mergui, stand to the northward till the South point of Iron Island is on with the centre of the Little Canister, and to the southward until within a mile or rather less of Plantain Island. From the small island mentioned, to Mergui Road, she may stand to the northward until the South part of Iron Island nearly touches the Little Canister, but it is prudent to keep them a little open, to avoid the edge of the dangerous bank that fronts the coast. In standing to the southward, the North point of Plantain Island must be kept at least a ship's breadth open with the South point of Iron Island, to avoid a bank which projects on this side from the Island Madramacan.

Ships being off Point Tavay or the Mosco's Islands with a northerly wind, should steer for the N. E. end of Tavay Island, and will have various depths, generally from 25 to 15 fathoms over a muddy bottom until near that part of the island: they ought then to proceed by the inner channel on the East side of Tavay Island, keeping nearer to the islets that lie contiguous to it than to the extensive rocky bank that fronts the main, having on the edge of it a small round island, and farther to the southward Long Island, mentioned in the foregoing directions.

To sail from Mergui in either monsoon.

DEPARTING from MERGUI in the N. E. monsoon, ships ought to pass through some of the channels between the North end of the Great Andaman and Sunken Island, whether bound to Bengal or the Coromandel coast, and conform to the directions already given for sailing from Rangoon Bar in this monsoon; but if February is commenced, those bound to the Coromandel coast ought to proceed by the channel to the southward of the Little Andaman, and make sure to fall in with the land to the southward of their port, for southerly winds begin then to prevail, with a current setting along the coast to the northward.

Ships bound to Achen, or Malacca Strait, after rounding the outermost islands of the Archipelago, may in the former case steer direct for the Golden Mount; and if bound to Malacca Strait, they may steer for the Seyer Islands, or South end of Junkseylon, or direct for the Nicobars, if bound there.

Should a ship leave Mergui in the S. W. monsoon, (which seldom happens) she must take every advantage to work to the westward clear of the islands, and pass through the Cocos or Preparis channel if bound to Bengal. She must stand to the Southward when she can clear the islands, if bound to Malacca Strait, Achen, or the Coromandel coast, and follow the directions given for sailing from Rangoon Bar in the S. W. monsoon. A small vessel if acquainted with the coast, and finding great difficulty to get to the westward of all the islands, might venture to pass inside of the principal groups, between them and the main, where a continued channel extends to Junkseylon inside of the Tanasserim,* Aladin, and Seyer Islands, with various soundings in it from 5 or 6, to 20 fathoms. There is good anchorage under many of the islands, and it is proper to keep nearer to them than to the

* The ship Susannah, Captain Drysdale, from Bengal bound to Malacca Strait, fell to leeward and got among these islands during the strength of the S. W. monsoon; the weather being dark and squally, she always anchored under some island in the night, and pushed through among them in the day. Captain Forrest, in the Esther brig, fell also to leeward, went inside of Domel and all the principal islands of the Archipelago, of which he made a cursory survey.

main, but attention to the lead and a good look out will be requisite, this channel not being yet well explored.

## *TANASSERIM ARCHIPELAGO, ALADIN, and SEYER ISLANDS; and that COAST from MERGUI to JUNK-SEYLON, with SAILING DIRECTIONS.*

General remark and caution for ships approaching the Tanasserim Archipelago.

THE ARCHIPELAGO of islands fronting the coast of Tanasserim are imperfectly known, ships, therefore, approaching, or intending to pass through any of the channels formed by these numerous islands, must proceed with caution. As there are soundings on the outside of most of them, (although to some, rather close, with deep water,) their proximity will be known by the lead if kept going, and in passing through any of the channels, or inside of the islands, a boat should be kept a-head sounding, for several unexplored dangers may exist.

Geo. site of Tores Islands.

The Noel Islands, placed formerly in lat. 10° 40′ N., and 33 leagues from the main-land, have no existence. The Tores Islands in lat. 11° 50′ N., lon. 97° 3′ E., are high, and the westernmost of the Archipelago; they form a group of 2 larger, and several smaller islands, the outermost being largest, and are distant about 26 leagues from the coast.

In lat. 11° 21′ N., about 11 leagues S. S. E. from the westernmost, or Great Tores Island, is situated a dangerous rock, which lies about 4 leagues West from the nearest islets to the eastward; being part of the first group to the southward of Little Clara, and to the westward of Domel.

Domel, the adjacent islands, and inside channel.

DOMEL ISLAND, called also Omel, or Great Clara, (the North end of it situated to the S. Eastward of Tores Islands, about 11 or 12 leagues,) is the largest in the Archipelago, and thought to extend from lat. 11° 24′ to about 10° 56′ N.,† being 8½ or 9 leagues in length, and 4½ or 5 leagues in breadth, and it is a high, uncultivated island. About 5 leagues W. S. W. from its North end, and 8 leagues S. Eastward from Tores Islands lies Little Clara, with other islands near it; and the depths decrease from 30 fathoms on the N. W. side of it, to 18 and 16 fathoms near the North point of Domel. The channel from sea, appears wide and safe to the northward of these islands, between them and the Tores group; and afterward along the East side of Domel, the depths are generally from 5 or 6 to 9 fathoms, about 2 or 3 miles from that shore, where a ship is well sheltered from the S. W. monsoon. This island is distant 6 or 7 leagues from the main, which from Mergui is mostly low, or of moderate elevation, with banks and islands fronting it; and another branch of Tanasserim River, in this space falls into the sea. About 5 miles inside of the North point of Domel, there is good anchorage in 5 or 6 fathoms under an island, having rocks and islets between it and the principal island, where water and timber may be procured. Between Domel and the main, there are several small islets and banks, and a ship passing along the East side of Domel, must avoid the Half Moon Shoal in about lat. 11° 7′ N., off the island about 4 miles, having a safe channel of 5 and 6 fathoms between it and that shore.

From Domel to the island St. Matthew, there is a continued chain of Islands, the largest and highest of which are *generally* those to seaward, excepting that called St. Susannah, about

† Capt. Forrest, and Capt. Inverarity, differ from each other upward of 20 miles in the lat. of this Island, and also in the latitudes of the other Islands from hence to Junkseylon, these navigators differ greatly.

5 or 6 leagues from the South end of Domel, is nearly 3 leagues in length North and South, and about 2 leagues in breadth. To the westward of it, at 5 or 6 leagues distance, 2 small islets called the Twins, front the sea in this place, bearing North and South from each other about 3 leagues, the southernmost being in lat. 10° 32′ N., and bears about S. by. E. from the Tores Islands.

On the East side of the Chain, between Domel and St. Susannah, the depths are mostly from 10 to 15 fathoms, but abreast of the latter there are overfalls; and Bowen's Shoal, dry at low water, is situated 1½ or 2 miles from the East point of the island, in about lat. 10° 32′ N. About 3 miles to the southward of the same point, there is good water on the North side of Flat Island, which issues from a rocky eminence; this and the adjacent islands abound with trees, some of them fit for masts, and plenty of oysters may be got on the rocks and islets at low tide, which rises here 11 feet, and flows till 12 o'clock at full and change of the moon.

Between St. Susannah and St. Matthew's Islands, there is thought to be several good channels among the smaller islands, through which ships might pass and be sheltered inside of the Archipelago in cases of distress, during the S. W. monsoon, when the squalls are sometimes very severe near this coast, with dark cloudy weather and much rain. They could lie in smooth water and repair their damages, and proceed by the inner passage to the southward when the weather became favorable.

Pine Tree Island.

PINE TREE ISLAND, in about lat. 10° 17′ N., nearly midway between St. Susannah and St. Matthew, has a dangerous reef on its West and S. W. sides; on the West side of Cat Island, which is the next to the northward, there are several rocks; and 5 miles South from the former, and about 1 mile S. S. E. from a small island there is a reef of breakers, having a group of 5 islands about a league to the eastward. The soundings inside, and amongst those islands situated between St. Susannah and St. Matthew, are in general from 9 to 20 fathoms, but not always regular.

St. Matthew, the neighbouring islands, and coasts.

ISLAND ST. MATTHEW, about 6 or 7 leagues in length, or from lat. 10° 5′ N., extending S. S. W. to 9° 46′ N., is about 5 or 6 leagues from the continent, and may be seen at a great distance, the highest part of it in the middle of the island being nearly 3000 feet above the level of the sea. At the North part of the island, there is a deep bay with soft bottom in it from 5 to 8 fathoms: by the islands off the entrance of this bay protecting it from the sea, and being sheltered from all winds, it forms an excellent harbour, about 4 miles in length and 3 in breadth. About 4 miles farther to the eastward, under the N. E. point of the island, called the Dolphin's Nose, there is another bay affording shelter for boats or small vessels; and on either side of the White Rock, off the Dolphin's Nose, there is a safe passage, but it is best to give a wide birth to the N. E. part of the large island opposite, on account of a 2 fathoms shoal near it.

Off the N. W. end of St. Matthew, 3 or 4 islands extend to the westward about 4 leagues, which front the sea in this place, and appear to be safe to approach.

On the continent opposite to the North end of St. Matthew, there is a river, and a group of islands close to the shore; several other rivers fall into the sea between it and Mergui, and the whole of the main is generally of moderate height. Nearly close to it in about lat. 9° 40′ N., opposite to the South end of St. Matthew, there is a group of islands, and probably a harbour inside of the 2 outermost, which are the largest; for close to these on the outside, and also between them, the depths are from 7 to 10 fathoms, increasing regularly to 15 or 16 fathoms near the island St. Matthew. About the middle of the eastern coast of the latter, there is a bay directly under the high-land, formed by a point of land on the North side, and an island to the southward; here, is a cascade of fresh water, and good anchorage on the

North side of the island in 8 or 10 fathoms.* Farther to the southward, near the S. E. end of St. Matthew, there are several rocks and islets with 17 and 18 fathoms water near them, decreasing regularly toward the continent in a safe channel.

Aladin Islands, and coast opposite,

ALADIN, or ALLEDIE ISLANDS, (named from the central Bluff Island) being a continuation of the Tanasserim Archipelago, extend from the South end of St. Matthew to lat. 9° 19′ N., and are all high, bold to approach, and may be seen a great distance; but the large southern island in lat. 9° 25′ N., has rocks off its N. W. point, and is surrounded by small islands.

Nearly in a line about midway between them and the Seyers, lies Middle Island by itself in lat. 9° 3′ N., which is high, and sometimes considered as the southernmost of the Aladin Islands, although detached from them. A little inside of a direct line joining this and the southern group of these islands, there are soundings from 40 to 34 fathoms.

Perforated Island, in lat. 8° 50′ N., situated about 4 leagues South from Middle Island, and 4 leagues N. E. by N. from the northernmost of the Seyers, is another detached island, named by Capt. David Inverarity, on account of a hole that passes through it; who in the ship Chance, worked from Junkseylon, inside of the Seyers, Perforated, and Middle Islands, and on the West side, of the other groups of the Archipelago as far as Tores Islands, in his passage from China to Rangoon. Perforated Island, has soundings about 2 miles inside of it 40 to 50 fathoms, 2 leagues E. N. E. 33 fathoms, and 5 miles S. by E. from it 35 fathoms, to the N. E. of the Great Seyer.

The channel betwixt these islands and the main is about 6 leagues wide, having regular soundings in it from 20 fathoms off the northernmost Aladin's, to 8 or 9 fathoms near the islands and banks contiguous to the coast opposite to them, which there, takes a S. S. West-

to Bangri,

erly direction, and forms a large bay abreast of the islands. In about lat. 8° 53′ N., there is an inlet to a lagoon or bay, where Bangri, a place of some trade, and frequented by the coasting vessels, is situated. On the South side, this inlet is bounded by a narrow tongue of sloping land; the point on the North side is low and covered with trees, perfectly level; at the entrance there is a perpendicular rock, and about 3 miles off, a dangerous shoal on which the sea breaks; from this shoal, the southernmost or detached Aladin, called Middle Island, bears about W. ½ N., and Perforated Island, near the Seyer Islands, about W. S. W.; the depth of water about 1½ or 2 miles outside of this shoal, is 12 fathoms.

and Papra Strait.

From Bangri inlet the coast takes a direction, first S. by W., then South and S. ½ E. about 13 or 14 leagues to Papra Strait in lat. 8° 9′ N., which separates Junkseylon Island from the continent, and is closed up by a reef of rocks at the entrance, over which the sea breaks high in bad weather.

The whole extent of land bordering the sea from Tavay River to the Strait of Papra, is generally called the Coast of Tanasserim, although the narrowest part of the continent which separates Siam Gulph from the Bay of Bengal, is sometimes called the Isthmus of Kraw. In the channel inside of the Tanasserim Archipelago, the flood generally comes from southward, except opposite to some of the channels between the islands, it comes through from West or S. W., according to their direction; and the ebb mostly comes from northward, except where it sets out to the westward in some places betwixt the smaller islands: amongst some of these, eddies and irregular tides prevail, but inside of the principal islands, the flood sets northward and the ebb in the contrary direction, from 2½ to 3 or 3½ miles per hour on the springs, and rises 10 or 11 feet.

Geo. site of the Seyer Islands.

SEYER ISLANDS, although detached, may be considered as the termination to the southward, of the Great Chain or Archipelago, fronting the coast of Tanasserim; although

* The Princess Royal, filled up her water at the Sandy Bay on the north end of the Island, where they found wild plantains, plenty of wild yams, and ground rattans of large size. This ship did not anchor, but stood off and on, while watering.

not so much elevated as some of the Aladin Islands, they are bold, safe to approach, and may be seen 8 or 9 leagues. By observation at noon, the northernmost island bearing E. by S. about 6 leagues, I made it in lat. 8° 43′ N.: the island next to this, called the Great Seyer, is of considerable magnitude, but the others are all small; and from the northernmost, they extend in a chain nearly South, to about lat. 8° 28′ N. They are 11 or 10 leagues West of Pulo Rajah and the South end of Junkseylon, or in lon. 97° 48′ E., and appear 8 in number, with 2 rocky islets off the S. W. end of the Great Seyer; next to it, the 2 southernmost islands are the largest of this group. On the East side of the Great Seyer Island, there is anchorage near the shore, although the depth is considerable; about 2 miles to the N. E. of it there is no bottom at 35 fathoms; a little farther East, and from thence to the main, soundings are got in the channel inside of these islands, which is from 7 to 9 leagues in breadth: along the West side of Junkseylon, soundings are obtained at a moderate distance from the shore, decreasing near it to 8 or 9 fathoms.

Geo. site and description of Junkseylon, and the adjacent islands.

JUNKSEYLON, or Jan-Sylan Island, separated from the continent by Papra Strait, extends from lat. 8° 9′ to 7° 46′ N., being 8 leagues in length, and about 3 leagues broad. There is a high regular sloping mountain on its southern part that may be seen 12 leagues, which is in lon. 98° 20′ E., or 2° 1½′ West from the fort of Prince of Wales' Island by chronometers,* measured by me at different times, and at another time 17° 58′ East from Madras Flagstaff. On the meridian of this mountain, and the South end of Junkseylon, in lat. 7° 36′ N., lies a high woody island, called Pulo Rajah or Pulo Taya; and 5 miles South from it, there are 2 other small but middling high islands, called the Brothers, with an islet near them. Between these islands and others contiguous to the South end of Junkseylon, the channel is safe, with soundings from 20 to 35 fathoms, and it may be adopted by ships coming from the westward; but the great channel to go into the bay, is on the East side of Pulo Rajah and the Brothers.

The western coast of Junkseylon, stretches nearly North and South; on the East side there are several bays, and the chief 1 where the harbour is situated about 4 leagues from the S. E. point of the island, is opposite to the small river where Terooa the principal town stands about 1½ mile up the river. The great passage into the harbour, is on the East side of the 2 Lalan Islands, which lie off the entrance in lat. 7° 56′ N.; and the anchorage is to the N. W. of them in 4 or 4½ fathoms mud, with the Little Lalan or northernmost island E. by S. 1 mile, the mouth of the river West or W. ¼ N. 3 or 4 miles, and the East point of the large island Pulo Coco, bounding the South side of the harbour S. ½ E. There is another passage into the harbour with 5 fathoms water, between the Great or South Lalan and a small islet called the Cap and Feather, off the eastern point of Pulo Coco. The great passage or North entrance, is bounded on the North side by an extensive reef of rocks dry at low water, which bears North from Little Lalan distant 2 miles. It is high water at 10 hours on full and change of the moon, the rise of tide is 11 or 12 feet, which runs about 2 miles per hour to the northward between Junkseylon and the large island Pulo Panjang to the eastward; and the ebb sets to the southward with equal velocity. At this place, water, poultry, and various articles of refreshment may be procured in abundance, and formerly it exported a considerable quantity of tin. The natives here, are generally hospitable to strangers. Exclusive of Terooa Bay, other harbours are formed in the North part of the gulf between the islands Junkseylon and Panjang, particularly among the Nacavsa Islands about 5 miles to the northward of the Lalan Islands, also in the entrance of Papra Strait; but the depths inside of that strait being generally from 2 to 3½ fathoms, without any passage at its

* Captain Blair made the same mountain 2° 1½′ West from the fort of Prince of Wales' Island by chronometer; and he made the Lalan Islands in lon. 98° 23′ East, by an eclipse of the 1st Satellite of Jupiter. Variation 2° 15′ East, in 1788.

western entrance to seaward, prevents it from being frequented by trading vessels. The South end of Pulo Panjang, and the islands interspersed between it and the South end of Junkseylon, are safe to approach, with soundings from 10 to 15 fathoms amongst them, decreasing toward the shores on either side of the entrance of the gulf.

## *ANDAMAN ARCHIPELAGO; with SAILING DIRECTIONS.*

Geo. site of Preparis.

PREPARIS ISLAND, extending nearly N. by E. and S. by W. from lat. 14° 49′ N., to 14° 56′ N., being 7 or 8 miles long, and 2 broad, and in lon. 93° 40′ E., or 33 miles to the westward of Cape Negrais by chronometer, is of moderate height, sloping gradually all round toward the sea, covered with wood, steep to, on the East side, having 7 fathoms water near the shore. At the North end, there are 2 small islets called the Cow and Calf, apparently steep to, and on the West side, 2 other islets, situated on a Great Reef that stretches out from Preparis Island to the westward, and 3 or 4 leagues southward from its southern extremity, part of the rocks are visible above water.

This reef seems to be of greater extent, and more dangerous than hitherto supposed, as will be perceived by the following account of it, transmitted to me by Capt. Balston, of the country ship James Drummond.

August 13th, 1815, steering to the S. E. to check the N. E. current, and to give a birth to the reef which projects from the South end of Preparis Island, when a rock above water was seen bearing S. E., and shortly after a flag displayed on it: immediately sent the cutter, which passed through a great surf, and returned afterward, with Capt. Daniels, Mr. White first officer, and 8 men belonging to the brig Athena, wrecked 3 days previously on this reef.* In steering to the S. E. after saving these people, saw breakers about 5 or 6 miles distant from the rock on which the brig was wrecked, so that this reef extends much farther from the South end of Preparis Island than generally represented; I made the northern extreme of the island in lat. 15° 7′ N.,† the southern extremity of the breakers in lat. 14° 44′ N., but the extent of the breakers to the eastward was not visible in the evening from the mast head.

It is therefore, only on the East side of Preparis Island, where ships can safely anchor, in 12 or 14 fathoms; or a small vessel may anchor in 8 or 9 fathoms with the extremes of the island from N. 2° E. to S. 65° W., the extremity of the reef projecting from the South end of it S. 35° E., and the 2 islets off the North end N. 3° E. to N. 8° E. about a large ½ mile from the shore. A few paces from a fine sandy beach, formed between 2 ledges of rocks, there is a pond of fresh water very convenient for watering, where boats may land with safety; it is in one with the highest part of the island bearing N. W. which is not inhabited. About 2 miles from the east side of the island there is 24 fathoms, and close to the reef at the southern extremity 30 to 36 fathoms; farther to the southward, no ground is got with 100 fathom line in mid channel between it and the Cocos Islands, but when the latter are approached within 2 or 3 leagues, bearing to the S. S. W., there is ground from 36 to 32 fathoms. In the channel between Preparis and Sunken Island, the soundings vary from 40

* Eighteen men had left the rock on 2 small rafts, before the 13th of August, in hope that the N. E. current would drift them to the coast of Tanasserim, but as they had neither a sail, oars, nor provision, they probably all perished.

† This is considerably to the northward of the situation assigned to that part of the island by other navigators, and may probably not be very correct.

and 44 fathoms near mid channel, to 24 or 22 fathoms near the former, and 17 or 18 fathoms near Sunken Island.

GREAT COCO, bearing from Preparis Island S. 17° W., distant 46 miles, and extending from lat. 14° 2′ N. to 14° 8′ N.,* is in lon. 93° 26½′ E. by chronometer and lunar observations. It is nearly 6 miles in length North and South, and 2 miles in breadth, covered with trees, some of which near the sea are cocoa-nut trees; and being of moderate height, a little uneven in its contour, may be seen at the distance of 6 or 7 leagues. Off the North end, there are 2 islets called the Table and Slipper from their aspect; and another islet is connected with the South end by a reef of rocks just covered at high water, that projects a considerable way into the sea. A ship may anchor on the East side of the Great Coco in from 14 to 20 fathoms; there is also anchorage on the West side, but there is little inducement to land here, firewood being the only article procurable, and perhaps a little water in some parts, by digging pits. Geo. site of Great Coco.

LITTLE COCO, bears from the great one S. 48° W. distant about 3 leagues, and N. N. E. from Cape Price, the N. E. point of Great Andaman, distant 9 leagues, the centre of it being in lat. 13° 58½′ N., and it is about 2½ miles long North and South, and ½ a mile broad; it is low, or rather moderately elevated, of an even appearance, and may be seen 6 or 6½ leagues. Trees cover it in every part, some of which facing the sea, are cocoa-nut or palmyra trees, and there is said to be fresh water on the East side, where a ship may anchor in moderate depths; at the N. W. end there is also anchorage with regular soundings toward the shore, and a fine sandy bay on the West side where boats may land, but no fresh water is procurable there. From the south end of the island, a reef projects to a considerable distance, which ought to be avoided in passing, particularly in the night. These Islands and Preparis, abound with monkies and squirrels; larger animals have not been seen upon them. Around and between the Cocos Islands, the soundings vary from 8 to 30 fathoms, deepening as the distance from them is increased to the East or Westward, suddenly to no ground. The Margaret passed between them, on the 25th of April, 1802, and the least water she had was 8 fathoms; but few vessels use this passage. Little Coco.

The channel between the Little Coco, and Landfall Island off the North end of the Great Andaman, is about 6 leagues wide, and hitherto thought to be very safe,† with soundings 30 or 35 fathoms near the former, and from 40 to 56 fathoms about mid-channel, decreasing to 20 and 18 fathoms near Landfall Island and the ledges of rocks to the eastward of it: the bank of soundings is about 4½ or 5 leagues broad East and West, the bottom mostly coral, but in some places it is sand and mud. During the N. E. monsoon, the current sets frequently through this channel to the N. W.; in the S. W. monsoon it sets mostly to the eastward, although in fine settled weather, tides prevail among these islands, the flood setting to N. N. E., and the ebb to the S. S. Westward. Channel between it and Landfall Island.

GREAT ANDAMAN, extending from Cape Price, its N. Eastern extremity, in lat. 13° 34′ N., lon. 93° 9′ E., to the S. E. point in lat. 11° 30′ N., lon. 92° 56′ E., or nearly S. ½ W. about 42 leagues in length, and from 6 to 10 leagues in breadth: although generally considered as 1 large island, it is in reality composed of 3 islands, separated from each other by 2 narrow straits, 1 in about lat. 12° 50′ N., and the other in 12° 10′ N.; there is thought to be depth sufficient in these straits for a vessel not drawing much water, but they are too contracted to be navigated except by boats, or very small vessels. About 6 or Geo. site of the North end of Great Andaman, and

* By Capt. J. Ritchie, but Capt. Hall, made the lat. of Great Coco 14° 11′ N., lon. 93° 25′ E.

† But Capt. Henderson, and Capt. Bennett, both experienced commanders in the country trade, have informed me, that the brig Daphne although drawing only 10 feet water, struck lately on a sunken rock which lies 7 miles south of the Little Coco.

Islands, 7 miles to the W. S. W. of Cape Price, is situated Cape Thornhill, the N. W. extremity of the island, off which at a small distance, there are 2 islets called Cliff and Reef Islands, and 3 miles to the northward of these, lies West Island: about 6 miles to the N. Eastward of the latter, in lat. 13° 39′ N., is situated Landfall Island, fronting the North end of the Andaman, at the distance of 4 or 5 miles, the East part of it bearing nearly North from Cape Price. It is the largest of these islands, of level aspect, and may be seen about 6 leagues; there is off its eastern point an islet called East Island, and both are encompassed by a reef having 3 fathoms on its western verge, which should not be approached under 18 or 20 fathoms in any part, particularly in the night or in thick water.

Channels, The channel between Landfall Island, and the north end of the Andaman, should not be attempted, for it is dangerous and very narrow,* having in the middle of it Cleugh's Reef, with rocky ground and overfalls on either side of that shoal. The soundings in this channel vary from 18 to 10 fathoms in the western and middle parts, increasing to 25 and 30 fathoms at the eastern entrance. The flood sets through to the eastward and the ebb to westward, high water about 5 hours on full and change of the moon.

and dangers near it. Ranger's Ledge, bears East about 3 miles from East Island, and close to it on the outside lies Jackson's Ledge, both dangerous shoals; to the S. Eastward of these about 7 miles, and nearly 3 leagues E. by S. from Cape Price, lies Union's Ledge in lat. 13° 20′ N., another dangerous shoal. Between the Andaman and these shoals, the bottom is mostly rocky with great overfalls; ships ought, therefore, to pass always outside of the shoals, in deep water, for at a small distance to the eastward of Jackson's Ledge, there is from 18 to 20 fathoms, and near Union's Ledge 30 and 40 fathoms. The edge of the bank of soundings extends only about a league outside of this ledge, rendering the approach to it dangerous in the night, or in thick weather, when the land is not visible.

Port Cornwallis. PORT CORNWALLIS, in lat. 13° 18′ N., about 16 miles to the southward of Cape Price, is an excellent bay or harbour, extending about 2 leagues into the land in a N. Westerly direction, and in breadth about 1 league. There are in it several small islands, of which the most conspicuous is Chatham Island, about 2 miles long; it contains also several creeks and coves; high water at 4½ hours on full and change of the moon. The entrance is about ¾ mile wide, with 18 fathoms in mid-channel, formed between an islet at the North point and a reef projecting from the South point; the depths within, decrease from 12 regularly to 7 and 6 fathoms, and the least water in the harbour is 5 fathoms.† To the northward of this harbour, near the shore, there is a group of islands surrounded by a reef; and about 4 or 5 miles to the southward, lie Ragged Islands, being 4 islets contiguous to the shore, with regular soundings 13 and 15 fathoms near them, and 25 to 29 fathoms, about 3 miles distance.

To approach it from the westward. Ships coming from the westward with a fair wind, and intending to stop at Port Cornwallis, ought to keep at 4 miles distance from West Island and Landfall Island, and at least 2 miles from the North point of the latter; having steered from hence, East 9 or 10 miles, they may haul to the southward and pass outside of Ranger's, Jackson's, and Union's

* It is sometimes called Pondicherry Passage, the French ship of that name having forced her way through it in 1750. The Admiral Pocock, Captain Cleugh, also went through it in December 1764; no ship, however, ought to enter it, except in a case of great necessity.

† This excellent harbour being land locked on every side, and surrounded by lofty mountains clothed with impenetrable forests, is very secure from all winds, and the scenery of nature is here uncommonly grand. A Colony from Bengal first settled at Port Chatham near the South end of the island in 1791, which was removed (by advice of Admiral Cornwallis) in 1793 to port Cornwallis; but the impenetrable forests being unfavorable to cultivation, with incessant rain in the S. W. monsoon, rendering the place unhealthy, the Colony was withdrawn after a few years residence on the island. The inhabitants of these islands are Negroes of small stature, very black, but strong and well shaped; they subsist chiefly on what fish they kill with darts, or shell fish procured among the rocks; but in tempestuous weather these are not always obtained, and hunger and cold sometimes deprive those miserable savages of existence.

Ledges. In thick weather during the S. W. monsoon, it will be prudent, after making Landfall Island and passing to the northward of it at a moderate distance, to steer East until out of soundings; or to keep in deep water on the outer verge of the bank, to round the Ledges with safety, for Union's Ledge is about 3 leagues from the shore, and not far within the edge of the bank of soundings.

Saddle Mountain.

About 3 leagues to the southward of Port Cornwallis, is situated Saddle Mountain, the highest on these islands, which is discernible at 20 leagues distance; it appears in the form of a saddle when viewed either from the East or Westward, and its North peak is in lat. 13° 10′ N.

Coast to the southward.

About 5 leagues to the southward of the Saddle Mountain, lies Sound Island, fronting the East entrance of Andaman Strait, called Stuart's Sound, having 70 and 80 fathoms very near it, and no soundings about a league off shore; and the whole of the East coast, from Saddle Mountain to lat. 12° 36′ N., is steep and mountainous.

Diligent Strait.

DILIGENT STRAIT, is formed between the East coast of Great Andaman and some contiguous islands, and a group or chain of larger islands about 3 to 5 leagues off it, extending from lat. 11° 48′ to 12° 20′ N. It is 2 and 3 leagues wide, except toward the middle, it is only about 2 or 3 miles in breadth betwixt the nearest islands, where the least water *found*, was 8 fathoms; and from 17 to 25 fathoms in the northern part of the strait, and in the southern part from 30 to 40 fathoms. The islands which form the East side of this strait, are generally high, covered with wood, and connected together by reefs; a bank of soundings extends a few miles around them, and along the coast of Andaman opposite, but a few leagues to the southward, this coast becomes very steep. At the north part of Diligent Strait, there are several shoals, and reefs project from some of the islands; the anchorage in the middle of it is good, with shelter from all winds. Opposite to these islands, in lat. 12° 2′ N. lies the eastern entrance of Middle Strait, which divides the Middle Island of Great Andaman from the Southern Island; and 3 or 4 miles farther South, Port Medows, a small harbour is situated, with another bay or inlet near it.

Adjacent islands.

Port Chatham.

PORT CHATHAM, in lat. 11° 41′ N. and 4 leagues from the South end of Great Andaman, extends a considerable way inland, having 13 fathoms in the entrance, near the islet fronting it, called Ross Island, and there are other islets and reefs inside. From thence to the South point, the coast is bold, with various depths on the bank of soundings lining the shore.

West coast of Great Andaman.

WEST COAST of Great Andaman, has a bank with various depths, stretching along it, and extending much farther out in some parts than the soundings on the eastern coast. Nearly West from the Saddle Mountain, about 8 or 9 leagues from the West side of the island, there is an extensive part of the bank, which is very shoal, and *probably* dangerous; although its dimensions and true position are very imperfectly known. Captain William Richardson, states, that his chief officer ran West on it 2 leagues in soundings from 6 to 4½ fathoms; he supposed that to be its breadth, and the length to extend North and South, parallel to the coast. A country ship from Masulipatam bound to Pegu, at day light, on the 20th of September, 1792, saw the Great Andaman bearing East, and observed at noon in lat. 13° 0′ N. then distant from the island 9 or 10 leagues. From hence she steered 3 or 4 miles to the eastward with a light breeze, and at 2 P.M. Coral Rocks were perceived under her, covered *apparently* with so little water, that the rudder seemed nearly to touch them, they hauled instantly to the westward, and soon got into deep water. In May, 1795, the Company's ship Pitt bound from Bengal to England, had the Saddle Mountain bearing East 9 or 10 leagues, and the extremes of the Great Andaman from N. E. by E. to S. E. by S., she then tacked in 14 fathoms and had 8 fathoms coral rocks in stays.

Bank off it.

Standing to the northward with a light breeze, she had 11, 7½, 14, 16, 24, 18, 12, to 9 fathoms, in the first part of the night, then tacked and stood S. W. by S., deepening gradually till day-light. At sun-rise the mountain bore E. N. E., and the extremes of the land from N. E. by N. to S. E. by S., distant 9 or 10 leagues, then in 60 fathoms. Between the shoal bank and the coast, the soundings vary from 40 to 20 fathoms, and 15 fathoms near the land.

Port Andaman.

PORT ANDAMAN, situated about 14 leagues to the southward of West Island, is formed between the West entrance of Andaman Strait and a long island fronting it at a small distance, called Interview Island, that extends from lat. 12° 47′ N. to 13° 1′ N.

Interview Island,

About 5 miles off its North end, there is a small island with an extensive reef projecting from it toward the North point of the former, betwixt which and the reef, there is a passage. A reef projects from the South end of Interview Island, with 14 fathoms close to, and also within it, in the entrance of the Port; and to the northward betwixt that island and the coast, lie several islets and rocks; other small islands are interspersed along the coast, from Interview Island to the N. W. end of the Andaman, with soundings near them, from 12 to 25 fathoms.

coast from thence southward.

From Port Andaman, to the western entrance of the Middle Strait, in lat. 12° 12′ N., some islets and reefs line the shore. About 5 leagues off, in lat. 12° 30′ N., opposite to an island near the shore called Flat Island, there is a bank with 12 fathoms on it, and 30 to 40 fathoms between it and the land. In lat. 11° 56′ N. there is an inlet called Port Campbell, with some islets at the entrance, and 6 or 7 fathoms inside. About 7 leagues farther to the southward, there is a group of small islands connected by reefs, called the Labyrinth, that projects around the S. W. end of Great Andaman.

Geo. site of North Centinel.

NORTH CENTINEL, about 8 leagues distant from the S. W. part of the Andaman, and bearing West from the Labyrinth, is a level island covered with trees, about 5 or 6 miles in extent North and South, and may be discerned about 6 leagues off. The shore is rocky, and 2 islets lie at the South end, and 1 at the N. W. end of the principal island. The centre of it is in lat. 11° 33′ N., lon. 92° 24′ E., or 5° 56′ West of the South end of Junkseylon, by chronometers, measured by me in 1800. Captain Clarke, of the True Briton, made it in lon. 92° 24′ E. by chronometers, measured from Madras observatory in 1801, and Captain P. Heywood, in 1802, made it also in 92° 24′ East by chronometers and lunar observations. There is said to be fresh water upon this island. The bank of soundings extends from the West coast of the Andaman a little beyond the North Centinel, with various depths on it from 20 or 30, to 50 fathoms, the bottom sand and coral toward the shore; but in 40 and 50 fathoms it is generally ouze.

South Centinel.

SOUTH, OR LITTLE CENTINEL, in lat. 11° 0′ N., bearing from the former about S. ½ E. distant 11 leagues, and 7 or 8 leagues distant from the N. W. part of Little Andaman, is a small woody island about a mile in extent East and West, that may be seen about 6 leagues. From each end of it coral reefs project about 2 cables lengths, on which the sea breaks high in the S. W. monsoon. Abreast of the East end of the island, about a ¼ mile off, we had no ground 40 fathoms, but about half way between it and the N. W. part of the Little Andaman, there is ground, 45 and 50 fathoms, decreasing to 13 and 10 fathoms within 1 or 2 miles off that shore.

Rutland island and the contiguous islands and coasts.

RUTLAND ISLAND, near 3 leagues in length, 2 in breadth, and of considerable height, is separated from the South end of Great Andaman by a narrow strait called Mac'Pherson's Strait, although formerly considered as part of that island. This strait is scarcely ¼ of a mile wide at the North point of Rutland Island, having 10 and 12 fathoms at the West entrance, and generally from 16 to 19 fathoms all the way through.

At a small distance from the West point of Rutland Island, there are 2 small islands called the Twins, with a reef projecting from them a little way to the West and Southward, near to which, the depths vary from 12 to 22 fathoms; and off the S. E. point of the same island, there is a group called the Five Islands, and in some charts, Angue Islands, which are moderately elevated. Between the point of Rutland Island and the nearest of these, distant from it about a mile, there is a safe passage with deep water in it, 45 to 60 fathoms. Along the South side of the island, there are regular soundings, of 13 to 18 fathoms about 2 or 3 miles off; but nearly 2 leagues to the westward of the South point, and the same distance S. Westward from the Twins, there is a bank of coral rocks with 7 fathoms on it, and probably less water. The South end of Rutland Island is in about lat. 11° 24′ N. Var. 1° 10′ East, off it in 1791.

DUNCAN'S PASSAGE, formed by the islands, which extend from the Five Islands off the S. E. point of Rutland Island to the North end of Little Andaman, is very safe and commodious. Duncan's Passage.

The northern or small passage, through which Captain P. Duncan returned from Manilla, in January 1760, is formed on the North side by the Five Islands, and on the South side by Passage Island and the Sisters, being 3 or 4 miles wide, with soundings from 25 to 14 fathoms. The southern extremity of the Five Islands is in lat. 11° 17′ N., from which projects a reef to a small distance around these islands. Passage Island, of middling height, lies to the S. S. Westward 4 or 5 miles from these, and the Sisters about 7 or 8 miles to the S. S. Eastward. The latter are 2 small islands near each other; the southernmost in lat. 11° 10′ N., lon. 92° 58′ E., is sometimes from its shape, called Round Island. In coming from the West toward the Great Passage, the Sisters are on with each other until they bear N. 20° E., then they begin to open, and the North Brother is on the same transit line bearing from them S. 20° W., distant 11 miles, or in lat. 10° 59½′ N. The Brothers are 2 small islands, when in one bearing S. 36° W., separated about 2 or 3 miles, and distant from the N. E. part of the Little Andaman from 4 or 5 to 8 miles; they are not so high as the other Islands, the trees on the southernmost are ragged, but on the North Brother they are perfectly level, which on this account is sometimes called Flat Island. Small one described, with the islands that form it. Geo. site of the Sisters. Brothers.

The Great Passage, through which Captain Duncan went, in his passage to Manilla, formed between the South or Round Sister and the North or Flat Brother, is about 10 or 11 miles wide, and very safe by day or night, if not too dark to see the land when near it; there being no danger, unless a reef projecting about ½ a mile from the North end of Flat Island be considered one, which by the water breaking on it, is always visible. If it be too dark, a ship may anchor in 12 to 17 fathoms sandy bottom in the channel, for the depths are generally from 12 to 20 fathoms sandy bottom, on the bank extending between Rutland Island and the North end of Little Andaman. This bank projects only a few miles to the eastward of the Brothers and Sisters, and 4 or 5 leagues to the westward of them, where it shelves suddenly to no ground, forming a deep concavity between the Centinels; for it takes a sharp bend from the North part of Little Andaman to the westward, and from Rutland Island it stretches out round the Great Centinel, joining the bank on the West side of the Great Andaman. Great Passage; with directions.

As reefs project from each of the Brothers, the space between them probably affords no safe passage for a large ship; but between the South Brother and the N. E. end of the Little Andaman, there is a passage with 6, 8, and 10 fathoms in it, through which H. M. sloop Ariel went in 1790. It is about a mile in breadth, bounded by reefs projecting from the South Brother and Andaman, and being narrow, it should not be entered except from necessity:—the passage to the northward of the Brothers, ought always to be chosen in preference.

In light breezes and fine weather, a kind of tides set through the channels among these

islands to the East and Westward, but at times currents prevail, which are generally governed by the wind. In the N. E. monsoon, on both sides of the islands, the current sets mostly to the S. W. or southward; a ship running for Duncan's Passage, should therefore, endeavour to keep a little to the northward in this season, and to the southward in the opposite monsoon, according to the prevailing wind, that she may preserve a leading breeze to pass through the channel.

Geo. site of Little Andaman.

LITTLE ANDAMAN, extends from lat. 10° 53′ N., to the S. E. point in lat. 10° 26′ N., being 9 leagues in length North and South, and about 5 leagues in breadth at the middle of the island; the South-east point is in lon. 92° 40′ E., or 16 miles East from the North Centinel by chronometer. This island has an even appearance, a little convex, sloping from the centre toward the sea all round, and may be seen 6½ or 7 leagues from the deck of a large ship. Like all the other islands, it is well clothed with trees, and 2 small *runs* of water fall into the sea, one at the North end, the other in a small bay at the N. W. part.* The soundings along the East and West sides of the island, are mostly from 10 to 18 fathoms about 1 or 2 miles off, deepening about 5 or 6 miles off to 50 or 55 fathoms, then no ground; the South side is more steep, there being no ground about 3 or 4 miles off shore, and 38 or 40 fathoms within 1 or 2 miles of it, a little to the eastward of the S. W. point of the island. From this point S. 79° W., 5 or 6 miles distant, there is a bank of coral rocks with 7 or 8 fathoms on it, or *probably* less water; which may be avoided by keeping farther out, or between it and the S. W. point of the island, in a good channel, having 13 and 14 fathoms near the sandy point, and deepening to 20 or 25 fathoms toward the coral bank.

Invisible Bank,

INVISIBLE BANK, named so by Captain Blair, as the water did not seem discoloured upon it, lies East from Duncan's Passage, distant from the Sisters 14 or 15 leagues, extending North and South about 10 leagues, or from lat. 10° 56′ to 11° 27′ N., and is nearly from 2 to 3 leagues in breadth. The soundings on this bank vary from 17 or 18, to 40 or 50 fathoms near its outer edges, where in deep water the ground is sometimes ouze or sand, but well in upon the bank, frequently foul and rocky, particularly near the dangerous rock now to be described.

Geo. site of Flat Rock.

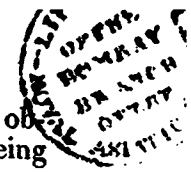
FLAT ROCK, in lat. 11° 8′ N., about lon. 93° 40′ E.,† bearing nearly East from the Sisters in Duncan's Passage, distant 14 leagues, is very dangerous, being only 8 or 10 feet above water, of circular form, about 30 yards in diameter, with rocky foul ground stretching out from it about twice its length, on which the sea breaks in bad weather.

directions to avoid it.

This dangerous rock being situated upon the Invisible Bank, a little to the southward of its centre, the lead if kept going will denote the near approach to it, for soundings extend from it all round to a small distance, but farthest to the North, and southward. At a small distance from the rock, the depths are from 13 to 20 fathoms, coral and sand, increasing in standing from it all round to 30 or 40 fathoms toward the edge of the bank; but as the soundings are not always regular, it would be dangerous to approach the rock in the night or in thick weather; for at such times, when a ship is in

* Like the Great Andaman, it is thinly inhabited, the natives depending chiefly on what fish they can procure for subsistence. The inhabitants of these islands were long considered as cannibals, but it is now known, that if ever they deserved such appellation, it arose probably from excessive hunger and not from choice. It is however, prudent, for boats landing at these islands to be on their guard, for a few years back, the boat of an American ship in landing on the Great Andaman was assailed by a shower of darts from the natives in ambush behind the bushes, who rushed out and endeavoured to hold fast the boat. After firing some musket shots at them, they fled, but several of the sailors were wounded by the darts, one gentleman who went in the boat for amusement, very severely between the ribs.

† Capt. W. Owen, in H. M. sloop Seaflower, made the breakers on the Flat Rock in lat. 11° 17′ N., lon. 93° 29′ E. and some other navigators, place it nearly in this longitude.



the vicinity of the bank, the lead should be kept briskly going, and if soundings are obtained, she ought to tack or haul out immediately into deep water. The Flat Rock being directly opposite to Duncan's Passage, is much in the way of ships from Mergui proceeding by that passage in the N. E. monsoon, but with common attention it may always be avoided.

BARREN ISLAND, in lat. 12° 15½′ to 12° 17′ N., lon. 93° 54′ E., or 4° 24′ West from the South end of Junkseylon by chronometers, measured by me in 1803; and in 93° 54′ East, by Captain Hall's chronometers, in the Worcester, in 1795, is high, of an even appearance when viewed at a considerable distance, and may be seen from 12 to 13 leagues from the deck. It is of small extent, covered with trees, except near the crater of the volcano.* Captain Almes, who landed on it in 1801, found no soundings within 10 yards of the shore; firewood could be got with difficulty, but he saw no runs of water. Geo. site of Barren Island.

With Barren Island bearing N. N. W. 5 or 6 leagues, there is said to be a bank, where Captain Sharrington in the Bahar saw the rocks along side, and had 4 fathoms water. This account is rendered doubtful, for no signs of a shoal bank in the situation described, have been discovered for many years.

NARCONDAM, in lat. 13° 24′ N., lon. 94° 12′ E., bears N. 14° East, from Barren Island, distant 70 miles, by observations taken when passing between them; Captain Hall, made it in lon. 94° 11′ E., by chronometers, and it is about 22 leagues distant from the nearest part of the Great Andaman. When in 21 fathoms close to Jackson's Ledge, off Landfall Island, Narcondam was in sight from our mizen shrouds; and on the same day, when the observed lat. at noon was 12° 55′ N., the Andaman seen from the deck, bore from W. by S. ½ S. to W. N. W., Gap of Saddle Mountain W. by N. ½ N., Narcondam N. E. ¼ N., and Barren Island not much elevated above the horizon S. by E. ½ E. Narcondam may be seen about 14 or 15 leagues from the deck, being higher than Barren Island, and appears in the form of a cone or pyramid with its summit broken off. Close to it on the East side there is an islet or rock, and another at the South point; but it is bold and safe to approach all round, and, like Barren Island, of small extent. Geo. site of Narcondam.

## *NICOBAR ISLANDS, with SAILING DIRECTIONS.*

THE CHAIN or Archipelago, called Nicobars, and by the Malays, Nine Islands, extends N. N. W. ¼ W. and S. S. E. ¼ E. about 53 leagues, having several safe channels among them:—8 or 9 of them are of considerable size, the others, 9 or 10 in number, generally small. Nicobar Islands.

* It was not generally known that Barren Island was in an igneous state until 1791, when we passed close to it in the King George, and perceived the crater of the volcano, with a quantity of very white smoke close to it. Since that time it has continued in the igneous state, subject to violent eruptions in the S. W. monsoon, or rainy season. In November, 1803, the volcano was observed to explode regularly every 10 minutes, projecting each time a column of black smoke perpendicularly to a great height; and in the night, a fire of considerable size continued to burn on the East side of the crater, which was then exposed to our view. The crater is large, nearly in the middle, or rather toward the North side of the island, and only seen from that side; close to it on the West side there is a small hill, but the contour of the island seems not to have altered in 12 years, although the volcano has been subject to great explosions, and the crater of great dimensions when compared with the extent of the island. The Thetis made Barren Island in 93° 53′ East, and the Mornington made it in 93° 54′ East by chronometer from Prince of Wales' Island.

Geo. site of Car-Nicobar. CAR-NICOBAR, the northernmost of these islands, bears from the S. E. point of the Little Andaman about S. by E. distant 80 miles, its centre being in lat. 9° 10′ N., lon. 92° 56′ E., or 12° 34′ E. by chronometers from Madras. It is about 6 miles in length North and South, and 5 in breadth, very little elevated above the sea, except at the West side, and near the S. E. point, there are small risings. The middle of the island is covered with long rich grass, where multitudes of hogs are bred; near the coast there are fruit trees of various kinds, particularly, orange, citron, lemon, and lime trees; plantains, yams, and sweet potatoes may be also procured, but cocoa-nuts are in the greatest abundance, on which all the animals are fed, there being no sort of grain. Ships from the Coromandel coast, stop here at times, to load with cocoanuts, which they receive in barter for coarse blue cloth, or other piece goods; and with the cargo procured here, they proceed to Rangoon, where they receive for it in exchange, a cargo of plank for ship building.

The inhabitants of this island are hospitable to strangers, and inoffensive to each other; they live in small villages near the sea on the different sides of the island, for the convenience of carrying their cocoanuts to ships. A ship having a scorbutic crew, may touch here for a supply of hogs, or other necessary refreshments, and she may anchor on either side of the island in from 12 to 30 fathoms, near some of the villages; but soundings do not extend far out, the bank being steep, and the bottom mostly sand, or sand and coral, makes the anchorage indifferent. The most eligible place to anchor at, is in a bay at the N W. end of the island in 10 or 12 fathoms, abreast of the watering place and village. The Minerva, in January, 1803, anchored in 8 fathoms, about ½ a mile off shore, with the village on the West side of the island bearing East, and procured a few hogs. The same ship returning from Bengal, anchored on the 13th of April, 1803, in 11 fathoms, with the extremes of the island from N. E. by N. to S. W. and a village S. by E. 1 mile, where she remained 3 days during calms and light airs, filling up her water.*

The City of London, November 15th, 1800, anchored at 10 P. M. in 15 fathoms, and at day-light the extremes of the island bore from E. ½ N. to S. W. ½ S., the hill South, off shore about 2 miles. She filled up with good water, procured some fresh provisions, cocoanuts, limes, &c. for her scorbutic and sick people, and sailed on the 18th.

The Ganges anchored on the 9th of November, 1805, in 15 fathoms, at the N. E. part of the island, bearing from West to S. by E. ½ E., and a village S. W. ½ S., off shore 1½ mile; here she remained 2 days procuring about 15 butts of water, the wells being nearly dry, and the surf rendering it difficult to get the casks from the shore; so the other side of the island seems preferable, when the season will permit a ship to anchor there.

The channel betwixt this island and the Little Andaman, generally called the Ten Degrees Channel, is spacious, and clear from danger.

Batty Malve. BATTY MALVE, in lat. 8° 46½′ N., bearing from the South end of Car-Nicobar about S. by E. ¼ E., distant 7 leagues, is about 1½ mile in length East and West, and half that breadth. It is destitute of water or inhabitants, being composed of an entire rock, covered with a thin stratum of soil, which gives root to some shrubs and scraggy trees. At the West end, it is of moderate height, sloping in the form of a wedge to the eastward, and has, therefore, been sometimes called the Quoin. At the S. W. end, about a mile distant, there are soundings from 25 to 35 fathoms, and 40 fathoms about ½ a mile off the West end of the island.

* Capt. Hay, of the Inglis, who touched here for refreshments, on the 28th of January, 1813, advises not to round the N. W. point of the island too close, as he got into broken water, at 1½ mile distant from it; and that a large ship ought not to come under 12 or 14 fathoms, as he did for the convenience of getting refreshments quick on board, having anchored abreast of the village in 9½ fathoms 1 mile distant, the North point N. E. ½ E., South point W. by S.; with 30 fathoms of cable out, a rock was seen under the ship, having only 7½ fathoms water on it. A ship ought to anchor about half way between the N. W. point and the village, in 12 or 14 fathoms sand, but on no account borrow so near the village as we did in the Inglis.

CHOWRY, in lat 8° 28½′ N., bearing S. 32° East from Batty Malve, distant about 7 leagues, is of square form, scarcely 1½ mile in extent. The S. E. angle consists of a large rock rising perpendicularly from the sea to a considerable height above the tops of the trees that grow on the island, which excepting this rock, is low and level, and not elevated more than 6 or 8 feet above the surface of the sea. Chowry.

Contiguous to the shore, cocoanut trees abound, and the whole of the level part of the island is a continued orchard of tropical fruit trees, oranges, citron, limes, &c. The natives rear also hogs and poultry, and like those on Car-Nicobar, are friendly to ships that stop at the Island:—cocoanuts may also be procured here for the Pegu market. Soundings project out 1 or 2 miles from the shore, particularly off the S. W. end of the island, ships may anchor in 15 to 25 fathoms. On the N. E. side there is a village, with anchorage abreast, in 20 or 30 fathoms sandy bottom.

TERRESSA, extending N. W. and S. E., between lat. 8° 12′ and 8° 22′ N., is about 4 leagues in length, and 5 miles broad at the N. W. end, but scarcely half so much at the S. E. end; the North end bears from the nearest part of Chowry S. S. E. ½ E., distant 6 miles. Terresa, when viewed at a considerable distance, appears like 2 islands, the land toward each end, particularly the North part, being much higher than in the middle. Its animal and vegetable productions are the same as on Car-Nicobar, but it is less populous. There is anchorage both on the East and West sides of the island; on the West side, the depths are from 30 to 40 fathoms within ¼ or ½ mile of the shore; at the South point where a reef projects out into the sea, it is not so steep, for a ship may anchor in 30 fathoms coarse sand, near the S. E. point of the island. This point, I made in lon. 93° 20′ East, or 12° 58′ East by chronometers from Madras. Geo. site of Terressa.

BOMPOKA, separated from the S. E. end of Terressa by a channel about 2 miles wide, is a small island, formed of a mountain partly covered with wood. Its summit is a sharp ridge, extending North and South about half the length of the island, from which the declivity on all sides is regular to the water's edge. This island is noted for its women being more fair and more handsome, than any of the Nicobarians. In the channel betwixt it and Terressa there is said to be safe anchorage, particularly inside, in 15 or 20 fathoms under Bompoka. Bompoka.

KATCHALL or Tillongchool, situated to the S. eastward of the South end of Terressa and Bompoka, and separated from them by a fine safe channel about 5½ leagues wide, is of triangular form, each side being about 3 leagues in extent. The North and West sides are moderately elevated, of level appearance, but toward the middle, and S. E. part of the island, the land is higher, and may be discerned about 8 leagues. It is covered with wood, and along the N. W. side there is anchorage in 15 to 25 fathoms coarse sand, from 1 to 2 miles off shore, but the N. E. side is steep, having no ground 100 fathoms about ½ a mile from it. The West end of Katchall is in about lat. 7° 54′ N., lon. 93° 29′ East, or 13° 7′ East from Madras by chronometers, measured by me in 1798; and captain C. C. M'Intosh made it 13° 6′ East from Madras by chronometers, in 1797. Katchall. Geo. site.

Ships may pass at discretion, through any of the channels between Car-Nicobar and Katchall, they being all very safe. Steering in the Anna for the Sombreiro channel in August, we were horsed to the northward by a current, and made Katchall bearing E. S. E.; bore away to the northward of it, and Camorta, and passed between the latter and Tillangchong, through an excellent channel.

NONCOWRY HARBOUR, in lat. 8° 0′ N., lon. 93° 41′ E., distant from the East side of Katchall 4 or 5 miles, formed by a narrow channel that separates the Island (Geo. site of Noncowry Harbour.

Noncowry from the South part of the Island Camorta, is very capacious, and will shelter a large fleet of ships from all winds. Having an entrance at each end, 1 to the eastward, another to the westward, with soundings close to them, where ships may anchor occasionally, makes it very convenient; and they may enter or depart from it in every month in the year. The western entrance about $\frac{1}{8}$ of a mile, or 100 fathoms wide, is formed between 2 steep points of high land, and the depths in it are generally from 27 to 35 fathoms: outside of it, a sand bank with irregular soundings from 6 to 12 fathoms, and patches of rocky bottom, project a little way from the S. W. point of Camorta. The eastern entrance is very little wider than the former, being contracted by rocky banks which line the shore on each side, having 12 and 14 fathoms close to them, and from 18 to 20 fathoms in mid-channel. Outside of this narrow part of the entrance, there is less water in the outer part, betwixt the South end of the Island Trincutte and the N. E. end of Noncowry; but in mid-channel, never less than 6 fathoms, and generally 5 or 6 fathoms, close to the rocky banks that bound it on each side.

The tide runs strong with eddies through the western entrance in the springs, but it is safe with a steady fair wind, particularly when departing from the harbour. The eastern entrance is preferable for going in, being rather wider, with less water; and there is safe anchorage outside of the narrow part, in the space betwixt Trincutte and the East side of Camorta, which is called ***False Harbour***, having various depths from 6 to 10 fathoms, but it becomes very shoal to the northward.

The harbour is separated into 2 parts by 2 points of land facing each other; the easternmost called Cross Harbour, from its form, is smallest, and contains several shelves of rock in the southern arm of it, with 5 or 6 fathoms close to them; here ships might be hove down to their own guns, the water being perfectly smooth in all kinds of weather. The western or largest part of the harbour is a great bason of an oblong square form about 2 miles long and 1 in breadth, with a cove on the West side, and another at the South end. In the N. W. part there is a rocky bank, with 5 and 6 fathoms water on it, but the depths throughout the harbour are generally 10 or 12 fathoms near the shore, and 18 or 20 fathoms in the middle, except near the western entrance there is from 27 to 34 fathoms. The bottom is all soft, good holding ground. The flood sets through the harbour to the eastward, but with very little velocity inside; high water at $9\frac{1}{4}$ hours, on full and change of the moon, and the tide rises 8 or 9 feet. Var. 1° 30′ East, in 1791.

Directions. Ships going in or out by either entrance, should endeavour to keep in mid-channel between the Points, with people on the fore, or foretopsail yard, to look out for the edges of the rocky banks that line the shores.

A few Danish, or Moravian Missionaries, have been settled here many years, for the purpose of converting the natives to christianity; the village at Cross Harbour where they reside, is called by them, Herman. There is little to be got here, the land being hilly and not cultivated, although on the North side of the harbour the soil is good, and will admit of cultivation. Water is got in wells, although it is rather scarce in the dry season. The Bellona and Isabella went into the harbour in November 1795, and could only procure a small supply of water, a few hogs, and 1 or 2 bullocks; although the Danish Chief gave them his assistance. The natives will barter what refreshments they have for tobacco, in preference to cash, and shag from Java they are very fond of.

Noncowry Island. NONCOWRY, which gives name to the harbour, and bounds it on the South side, is about 4 miles in extent, of triangular form, rugged and uneven, almost covered with wood. It abounds with lime stone, is thinly inhabited, and little can be procured from it excepting timber, and some hogs.

The harbour is considered unhealthy, by the noxious vapours arising from the impervious forests, and impregnating the surrounding atmosphere. The largest of the Nicobar Islands,

are in general from the same cause, liable to the same disadvantage; and the fever that prevails, called the Nicobar fever, (or jungle fever of the continent) frequently proves fatal to Europeans who remain long at these Islands.

CAMORTA, or Car-Morta, on the North side of the harbour, is about 16 miles in length North and South, extending to lat. 8° 15′ N., and from 2 to 5 miles broad. The North end, and middle of this island, are flat and not much elevated, but about the harbour it is high, particularly on the West side, where stands the principal village at the foot of a perpendicular ridge. There is said to be several sorts of poon trees fit for masts, which grow on the island; and there are several places of pasturage, with a rich soil, producing yams, pine apples, plantains, guavas; and sugar-canes are said to grow without cultivation, notwithstanding, it is thinly inhabited. About 3 miles from the S. W. point, lies the mouth of a lagoon, which extends into the island a great way. Along the West side, there are soundings near the shore, and from the N. W. point, projects a reef of rocks, with shoal water about 3 miles off. Camorta.

TRINCUTTE, a low, level island, covered with beetle-nut and cocoa-nut trees, about 2 leagues in length, near to, and fronting the East side of Camorta, is separated from it by a narrow space; which excepting the southern part, is shoal, and forms the first large opening in entering Noncowry Harbour from the eastward. There are soundings along the East side of this island at a small distance from it, 15 to 20 fathoms, and good anchorage in 8 or 9 fathoms at the North end, between it and the N. E. part of Camorta. Trincutte.

TILLANGCHONG, including the small islands adjoining to its South end, extends from lat. 8° 22′, to 8° 33′ N., being 2 or 3 miles in breadth, and lies to the N. N. E. of Carmorta, 3 or 4 leagues distant. It is a high oblong rugged mountain, that may be seen 12 leagues off, in many parts covered with trees, and inhabited only by such persons as have been banished from the other islands. The East side of the island is steep, but close to the islets and rocks that line its western shore, and near those chained to its South end, the depths are from 36 to 42 fathoms. Betwixt the latter and the North end of Camorta, the channel is 3 leagues wide and very safe, with a bank of soundings stretching from the islets off Tillangchong to the Islands Camorta and Trincutte, on which there are 42 and 45 fathoms near the former, from 40 to 65 fathoms in mid-channel, and 18 or 20 fathoms near to Camorta. Tillanchong.

SOMBREIRO CHANNEL, bounded on the North side by the Islands Katchall and Noncowry, and by Meroe or Passage Island on the South side, is very safe, and about 7 leagues wide. Meroe is a low small island, about 3 leagues to the N. W. of the Little Nicobar, and bears from the S. E. point of Katchall S. 13° E. distant 7½ leagues, being situated in lat. 7° 29′ N., lon. 93° 46′ E., or 13° 24′ East from Madras by chronometers. About 3 leagues South from the S. E. end of Katchall, there is a coral bank with various depths; the least water found on it has been 9 and 10 fathoms, but both to the northward and southward of it, there is no ground in the channel. Ships steering for it, if not certain of their latitude, should endeavour to fall in with the land on the windward side, according to the prevailing monsoon; and they may pass through without hesitation, by night as well as by day, if the weather is not too dark at the time. Sombreiro Channel. Geo. site of Meroe, with directions.

About 4 miles E. by S. from Meroe, and nearly the same distance from the North end of the Little Nicobar, there is a small island called Track, and another close to it on the East side called Trice, which are surrounded by rocks. Betwixt them and Meroe, the passage is thought to be safe, with soundings from 12 to 20 fathoms; and betwixt them and the Nicobar, there is said to be a narrow and critical passage, with soundings from 7 to 12 fathoms, which should never be attempted.

The 2 large islands to the southward of Sombreiro channel, are sometimes called the Great and Little Sambilangs, but generally the Great and Little Nicobars; the former being the largest and southernmost of all the islands which form this chain.

Little Nicobar. LITTLE NICOBAR, extends nearly N. E. and S. W. from lat. 7° 13′ to 7° 26′ N., being about 4 leagues in length, and half that breadth; it is moderately elevated and hilly, covered with wood, and steep to seaward; but there are soundings all round, near the shore. On the N. W. side, a little to the westward of an island adjoining the shore, there is said to be anchorage off a small bay, where there is a run of water; but although this island and the Great Nicobar are said to have many inhabitants, they are more imperfectly known than the other islands; the natives being shy of strangers, seldom or never venture on board of ships passing. They are, however, thought to be inoffensive, and have treated with lenity the people belonging to vessels that had the misfortune to be shipwrecked there.

St. Georges' Channel. ST. GEORGE'S CHANNEL, formed between the Great and Little Nicobar, is from 3 to 6 miles wide, and extending E. N. E. and W. S. W. about 5 or 6 leagues in length, with deep water in it, except near the western entrance. The bottom in general is foul, with strong tides or currents running in eddies through this channel; therefore, of late years, few ships have passed through it, unless accidently carried into it by an unexpected current. A little inside of the western entrance, the Island Condul is situated, nearest to the southern shore, and between them there is no safe passage. From the North end of the same island a reef projects considerably, betwixt which and the northern shore, is the proper channel, and ships that intend to proceed through, should keep nearest to the North side, or Little Nicobar shore, where there is said to be soundings, but none in mid-channel. The rocky bottom, deep water, and strong eddies, will however, always make it imprudent to anchor, except to the westward of Condul Island, where the depths are moderate. On the south side of the eastern entrance, off the N. E. end of Great Nicobar, is situated the small Island Cabra of middling height; and on the North side, the Island Monthoule, near the East end of Little Nicobar. The entrance into the channel, is between these 2 small islands.

Directions for sailing through it.

The current. THE CURRENT sometimes sets strong to leeward for several days together, through the various channels between the South end of the Little Andaman and the southernmost Nicobars, according to the strength of the prevailing monsoon; but at times it slacks, or sets to windward, particularly when the winds are light and variable. Under lee of the different Islands, there is frequently a kind of tides prevailing, when the current is setting strong to leeward through the channels between them.

Great Nicobar, GREAT NICOBAR, extends N. by W. and S. by E., about 10 leagues in length, and 4 or 5 leagues broad at the North part and middle of the Island, where the land is high, and may be discerned 11 or 12 leagues off. The South part becomes narrow, projecting out into a low level point about 1½ or 2 miles broad, covered with trees, and having a sandy beach facing the sea. This point is in lat. 6° 45′ N., lon. 94° 0′ E., or 10° 34½′ West from Pulo Aor by 2 chronometers exactly agreeing. By 3 chronometers agreeing to ½ a mile, I made it 21° 1′ East from Bombay Castle, and Captain Mc'Intosh made it 21° 4′ East from the same, by good chronometers; the mean 21° 2½′ East, will place it in lon. 94° 0′ 10″ E., allowing Bombay Castle in 72° 57′ 40″ East of Greenwich, as described in Vol. First of this work.

Geo: site.

Captain P. Heywood in 1804, made the South Point of the Great Nicobar in lon. 94° 0½′ E., by chronometers from Madras, allowing the latter to be in lon. 80° 21½′ E., and he made it in 92° 2′ E., by lunar observations.

The highest part of this Island is in lat. 7° 8′ N., and in general, the whole of it is covered with trees. Soundings from 17 to 24 fathoms extend along the West coast, about 2 and 3 miles off shore; from the S. W. side the bank projects out about 2 leagues, or more, the depths on it being from 25 to 30 fathoms about 5 or 6 miles from the shore. From the South point a reef projects a considerable way into the sea, and lines the shore on the West side, with soundings near it of moderate depths, over a bottom of coarse sand and shells; the S. E. side of the point is thought to be more steep, although it seems probable, that soundings extend along the East side of the Island near the shore, which part is generally avoided by ships, and therefore not well known.

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# *WEST COAST of SUMATRA.*

## 1st. ACHEN, AND THE CIRCUMJACENT ISLANDS, WITH SAILING DIRECTIONS, WINDS AND CURRENTS.

AS the GREAT ENTRANCE leading to MALACCA STRAIT from the westward, is formed between the South end of the Great Nicobar and Pulo Rondo, (the northernmost of the Islands off Achen) it seems expedient to endeavour to approximate their true situations; for they are often seen by ships approaching the Strait, or used as stations of departure in sailing from it, when bound to the westward.

PULO* RONDO, is in lat. 6° 4½′ N., lon. 95° 14′ E., or 3° 47′ West from Pulo Pera, measured by me twice, by good chronometers. Captain P. Heywood, made it 14° 52′ East of Madras by chronometers,† which places it in lon. 95° 14′ E., and he made it 5° 9′ West from the fort of Prince of Wales' Island, which would place it in lon. 95° 13′ East. Geo. site of Pulo Rondo.

From the South end of Great Nicobar it bears S. 61° E., distant 84 miles, and being a high perpendicular rock of round form, may be seen 8 leagues from the deck of a large ship. On the North side it is steep without soundings, which is the case all round; but to the southward, distant from it about 2 miles or more, there is a ledge of rocks above water, betwixt which and the N. W. end of Pulo Way, there is a safe channel about 3 or 3½ leagues wide.

PULO WAY, the largest of the Achen Islands, distant about 4 leagues to the S. Eastward of Pulo Rondo, extends in the same direction about 3 leagues in length. Being high and uneven, it may be seen 12 leagues; and along the South side of it, in some parts, there is said to be soundings near the shore. Pulo Way.

MALACCA PASSAGE, formed between Pulo Way and the Sumatra coast, is about 3 leagues broad, having in it the small Island Malora, or Pulo Buroo, about ⅓ channel over from the Sumatra shore. The passage on either side of this island is very safe, but between it and the Pulo Way the water is deep; whereas, that inside, has moderate depths for anchoring occasionally; 14 to 16 fathoms near Malora, and 9 or 10 fathoms near the Sumatra shore, which in passing Point Pedro must not be approached under 10 fathoms. This is the best passage to approach Achen, in coming from the N. E. or eastward. Malacca Passage.

* Pulo, or Pooloo, signifies an Island in the Malay language.

† The Princess Amelia in 1811, made it 14° 51′ East of Madras by chronometers.

Geo. site of Pulo Brasse; islets adjoining.

PULO BRASSE, and PULO NANCY, are high, and the principal islands of the group contiguous to Achen Head. Pulo Brasse fronts the sea to the N. W., and is very high, of an even aspect, the North end being in lat. 5° 46′ N., lon. 96° 6′ E., bearing from Pulo Rondo about S. S. W. distant nearly 7 leagues. Off the North end of it there are 4 rocky islets, the northernmost of which is about 2 or 2½ miles distant, and is about 25 feet above water, with regular soundings near it, 25 to 28 fathoms mud about the distance of a mile to the eastward and northward, but a reef projects from the North end of Pulo Brasse toward it and the other islets. The outer islet is bold to approach on the East, North, and West sides.

Along the East side of Pulo Brasse, there is also 20 or 25 fathoms sandy bottom, at a moderate distance from the shore, where ships may occasionally anchor.

Bengal Passage.

BENGAL PASSAGE, formed between Pulo Brasse and Pulo Way, is about 4 leagues wide, and very convenient for ships sailing from Achen to the northward, as the current generally sets out, in that direction. Ships bound into Achen Road, seldom proceed through this passage, unless with a steady commanding breeze; there being no anchorage in it except near Pulo Brasse, the Malacca passage is thought preferable; ships coming from the S. Westward, generally to save time, adopt the Surat passage, but the Bengal passage is favorable for ships bound out from Achen Road to the westward, as the current in the S. W. monsoon sets round Pulo Brasse to the westward from 25 to 40 miles in 24 hours.

Pulo Nancy.

PULO NANCY, nearly joins to the S. E. point of Pulo Brasse, but between them on the West side, there is Middle Island of considerable size, with some islets or rocks near it on the South side. Very near the West point of Pulo Nancy there is a reef of rocks, which bounds the West end of Cedar passage on the North side, having 10 and 12 fathoms close to it outside, and 14 fathoms betwixt it and the point of Pulo Nancy, although it lies near the point.

Cedar Passage.

CEDAR, or SEDRE PASSAGE, formed between Pulo Nancy to the northward, and Stony Island and Pulo Gomez to the southward, is little frequented, although wider than the Surat Passage, and safer than generally supposed, there being soundings in it from 17 to 20 fathoms in mid-channel. The only dangers are at the West entrance, rocks projecting out from Pulo Gomez to the westward, on which the sea breaks high in bad weather, and the rocks on the North side, close to the West point of Pulo Nancy already mentioned; there is also a reef that projects from the West end of Stony Island to the N. Westward a considerable way into the channel. If a ship proceed through this passage, it may be prudent to keep a boat a-head, sounding occasionally.

On the South side of Pulo Nancy, about a large mile inside of the West point, there is good anchorage in 6 or 7 to 10 fathoms in a small bay; on the West side of which, fresh water may be procured, and plenty of firewood. The narrowest part of the passage, is betwixt the reef projecting from the West end of Stony Island and the shore of Pulo Nancy, and there, it is about a mile broad. Between that reef and the N. E. end of Pulo Gomez, there is 14 and 16 fathoms in a channel of communication from Cedar Passage into the Surat Passage. Stony Island and Pulo Chinchin, are steep on the North sides, having from 11 to 14 fathoms close to them: from the East point of Pulo Nancy, rocks project a little way, and close to them there is 15 fathoms.

Surat Passage and contiguous land.

SURAT PASSAGE, is separated on the North side from Cedar Passage, by Pulo Gomez, Stony Island, and Pulo Chinchin, which extend in the line of the passages, and the 2 latter are chained together by rocks. On the South side, it is bounded by King's Point, the western extremity of the land generally called Achen Head, situated in lat. 5° 36′ N., and

very little to the eastward of Pulo Rondo; it is a high bluff headland, and forms the N. Western extremity of Sumatra. In approaching it from the S. W., no opening is peceived, the contiguous islands, Gomez, Nancy, and Brasse, appearing to join the mainland, when seen from that direction. To the southward of King's Point at 5 miles distance, on the South side of a low green point, there is a sandy bay, which at a considerable distance may be mistaken for the Surat Passage or a strait, the land there, being low near the sea, and covered with trees. In this bay there is a rocky islet, and at its South point, 2 rocks above water on which the sea breaks, with 12 and 14 fathoms near them, and the bay is lined by a reef fronting the sea. From hence, King's Point appears like a steep hill; Pulo Gomez then resembles 2 paps, its western point being very low, with an islet adjoining, and breakers projecting a considerable way to the westward. To avoid these, ships steering for the Surat Passage, should keep nearest to King's Point, which is bold with regular soundings 12 and 14 fathoms sandy bottom at a moderate distance from it: and they may anchor occasionally to stop tide, near that shore, in 7 or 8, to 10 fathoms water. The South side of Pulo Gomez, is also safe to approach; the depths are 24 to 15 fathoms when its South point bears East from 1 to ½ a mile, 18 fathoms with it E. by N. 2 miles, 14 fathoms when E. by N. ¾ of a mile, and 13 fathoms when it bears E. N. E. about 1 mile; and regular soundings from 20 to 35 fathoms, extend about 2 leagues to the westward of it and King's Point.

If a ship about to enter the Surat Passage find the tide unfavorable, she ought to anchor under King's Point until the flood is made, which sets directly through the passage to the N. Eastward, and the ebb in the opposite direction; after weighing with the flood, she ought to keep nearest to King's Point in passing between it and Pulo Gomez, where there are regular soundings and good anchoring ground, from 10 to 17 fathoms. The narrow gut or gateway, at the East end of the passage, formed between Achen Head or the eastern extremity of King's Point, and the opposite island, is only about 80 or 90 fathoms wide; with 30 and 35 fathoms rocky bottom, and the tide sets through it with great rapidity, 5 and 6 miles an hour in the springs. If the wind is contrary, a ship should *back* and *fill* through this narrow part, with her head toward the windward shore, keeping rather nearest to King's Point, which is perpendicular and steep to; whereas, the shore of the opposite island, is not so bold. A ship proceeding to sea in the S. W. monsoon, should enter it with the first of the ebb, with the main-topsail aback, and her head toward the Sumatra shore if the wind is at S. Westward; but the eddies occasioned by the rapid tides, sometimes carry a ship's head round in every direction, when driving through this narrow pass, particularly in light winds. It being formed between 2 points, and of little extent, a ship is soon drifted through; and there being anchorge on each side of the entrance at a small distance, this passage may be considered (although narrow) tolerably safe.*

Directions to sail in through it, or out to seaward.

The Castle Eden, bound to Bengal in a fleet, anchored on the 3d of November, 1800, at 8 P. M. in 13 fathoms, at the West entrance of the Surat Passage. At day-light she weighed and stood for it with the wind at S. E. shoaling gradually to 7 fathoms, and deepening afterward to 25 fathoms no ground. She was in the narrowest part of the passage at this time, when the tide turned to the S. W., and set her fast astern; she was permitted to drop into 8 fathoms fine sand, then anchored with Pulo Gomez S. 65° W., King's Point from S. 16° W. to the easternmost extreme of the passage N. 75° East. At 4 P. M. on the 4th of November, she weighed with the flood, and went through the passage, then steered about E. N. E. to the anchorage at Achen, shoaling from 20 to 10 fathoms at 6 P. M. when she anchored with the river's mouth bearing S. E. ¼ E., distant about 1½ mile. In the Surat Passage, it high water about 8 hours, on full and change of the moon.

* The China fleet homeward bound, recently touched at Achen, and proceeded to sea by the Surat Passage; the fleet bound to Bengal also went through it, and stopped at Achen for water in November 1800.

Geo. site of Achen.

ACHEN, in lat. 5° 36′ N., lon. 95° 26′ E.,* distant about 2½ leagues from the eastern end of the Surat Passage, is a considerable town situated on the banks of a river, which falls into the sea by several branches, separating the low country into islands; and this low plain formed between the foot of the mountains and the sea, is partly inundated during the rainy season. This was formerly a place of great trade, and frequented by ships from the different countries in Europe, as well as those from China, and all parts of India, when the kingdom of Achen was powerful and flourishing; but it is now become feeble and much reduced, many of the Rajahs or chiefs, who formerly were tributary to the King of Achen, being now independant. Gold, camphor, pepper, sulphur, beetlenut, &c. used to be exported, and there is still some trade carried on by small vessels from different parts of India, but large ships seldom touch here, unless to procure refreshments. Rice, bullocks, poultry, vegetables and fruits, may be generally got in abundance, and plenty of fresh water. The principal entrance of the river has a shoal bar, which a boat can hardly pass at low water; but vessels from 20 to 30 tons burthen may enter the river at high water, when the rise of tide is about 7 feet on the springs, high water at 9 hours on full and change of the moon, subject to irregularities from winds or other causes. The common anchorage of the road, is in 8 or 9, to 10 or 14

Anchorage.

fathoms water, about 2 or 3 miles off the entrance of the river, in lat. 5° 38′ N., with it bearing S. ½ E. to S. E. Here, vessels are well sheltered from the S. W. monsoon, which generally prevails from April to November; in the other season, the easterly winds seldom are strong, but northwesters happen at times; these blow into the Bengal passage with great force, and require good ground-tackle to ride secure against them. In the road and near the shore, land and sea breezes are often experienced in both seasons, but the land breezes are very partial, seldom extending beyond the islands. The king of Achen resides generally at Tulosamaway, and Achen being seldom visited by him, it has in consequence, been little frequented lately by trading vessels; the chief places of trade to the eastward of Achen, are Pedir, Bourou, and Tulosamaway. Ships trading here, ought to be on their guard, and not put too much confidence in the people with whom they trade, nor suffer them to be much in their debt; when this has been the case, many ships have been cut off, as the easiest manner of settling their engagements. During these last 30 years, the king of Achen has been at war with some one or other of his subjects; and his fleet consisting of 12 or 14 snows and brigs, is continually cruizing from Tulosamaway round to Soosoo on the West coast.

Geo. site of the Golden Mountain.

GOLDEN MOUNTAIN, OR QUEEN'S MOUNTAIN, situated a little way inland about 7 or 8 leagues to the eastward of Achen, in lat. 5° 27′ N., lon. 95° 49′ E., or 1° 49′ East from the South end of Great Nicobar, by chronometers, is a high regular cone about 6900 feet above the level of the sea, and may be seen about 92 miles from the deck in clear weather. When it bore S. S. W., distant from us 88 miles, the summit was seen from the deck a little elevated above the horizon. In clear weather, this beautiful mountain when visible, is a good mark for pointing out a ship's situation in entering Malacca Strait, when her distance from the islands is too great to admit any of them, or the land near King's Point, to be discerned. There is a small mountain close to the Golden Mountain, called in some old journals the Orphan: the natives know these mountains by the

To sail from Achen.

appellation of Ya Mura, Ya Muree.

Ships departing from Achen, may, if bound to the northward, pass out by the Bengal, or Malacca Passage, as circumstances render prudent; those bound to the westward in the S. W. monsoon, may proceed through the Surat Passage if the weather is favorable; otherwise, through the Bengal Passage, keeping close to the islets off the North end of Pulo Brasse, where a current will assist them in getting to the westward. This has been already observed in Volume First of this work, near the end, where directions are given for sailing to,

* Capt. Basil Hall, of the Royal Navy, in 1814, made Achen Road in lat. 5° 36¼′ N., lon. 95°24′ E. by lunar observations.

and from Malacca Strait and Achen in the S. W. monsoon;* and a general description of winds and currents near Achen Head and the Nicobar Islands, will be found in an early section of the same volume; but a brief statement of the prevailing winds and currents, in this place, may be more comprehensive, and of greater utility.

S. W. MONSOON, generally begins about the end of April, or rather early in May, between Achen Head and the Nicobar Islands, and abates in October; although in October, and also in November, westerly winds frequently prevail. During the strength of this monsoon, from May to September, the weather is often cloudy, with squalls and heavy showers of rain at times: the current is then generally found to set with the wind to the eastward into Malacca Strait, but more commonly to N. Eastward; it is, however, liable to change, and set to the southward at times, particularly when the wind is light and veers to the westward. When the current in the S. W. monsoon is running in betwixt the South Nicobar and the islands off Achen, to the N. Eastward, there is generally a contra or eddy current setting along the coast of Pedir to the westward, which continues to set in that direction amongst the Achen Islands to seaward: therefore, all ships bound from Malacca to the westward, should in this season keep near the coast of Pedir, and after reaching Achen they ought to go out by the Surat Passage, or through the Bengal Passage, observing to keep close round the North end of Pulo Brasse, and then take every advantage to tack with the shifts of wind that are favorable for getting to the S. Westward.

The S. W. monsoon,

and current.

How to work out of the Strait of Malacca, in that season.

The King George, by beating in the open sea between Pulo Rondo and the Nicobars in July, 1791, was 14 days getting a few leagues to the westward of Pulo Brasse; had she passed inside of Pulo Way, and proceeded through the Surat or Bengal Passage, she probably would have saved most of that time.

The Worcester, in May, 1795, bound to Bencoolen, working in the same manner too far out from Sumatra, could not get round Achen Head, and returned to Prince of Wales's Island. She sailed again from thence on the 16th of June, steered along the Pedir Coast, anchored at Achen on the 26th, and from that place got speedily out of the Strait, by passing close round Pulo Brasse.

Many other ships have been greatly delayed by endeavouring to work out between the Nicobars and Pulo Rondo, against strong winds and N. Easterly currents in the S. W. monsoon; not knowing that a favorable current generally prevails close to the Sumatra Coast, and among the islands.

N. E. MONSOON, mostly prevails in the entrance of Malacca Strait, between Achen Head and the Nicobar Islands, from November to May, which is the fair season. In October and November the winds are variable, frequently at N. W. and Westward; although in some seasons, the N. E. winds set in regularly in November. From this period to March, the N. E. monsoon is strongest, but at times it is liable to veer to the northward or N. W.; and westerly breezes of 1 or 2 days duration, have been experienced sometimes, in every month when the N. E. monsoon should prevail. Late in March or early in April, the N. E. and Northerly winds, become light and variable. When the N. E. monsoon blows steady, the current generally runs with the wind out of the strait to the westward. When the wind draws to the northward, the current a little outside of the Achen Islands, sets to the southward between them and the Nicobars; and when the wind veers to West or S. W it *generally* runs into the strait, or to the North-eastward; so that the current there, is in its direction and velocity *mostly* governed by the wind. This is however, not *always* the case, for at times the current is found to run oblique, or contrary to the wind, which requires the

The N. E. monsoon.

And current

* See also, directions relative to sailing to, or from Achen, in the two sections of this work, where Rangoon and Mergui Rivers are described, with sailing directions.

navigator to be cautious when no observations are obtained for the latitude; more particularly, when running for the entrance of the strait during thick weather, in the S. W. monsoon.

Directions. Ships leaving the Strait in October or November, when westerly winds are found to prevail, should follow the track already recommended for ships bound out in the S. W. monsoon, that they may benefit by the westerly set on the coast of Pedir and among the Islands, or at least avoid the current running into the strait in the offing.

The Thames in November, 1800, bound out of the strait to Europe, had the winds from S. W. with a current setting in between Pulo Rondo and the South Nicobar, which prevented her from getting out to the southward of the latter; she was therefore obliged to stand to the North-westward, and passed out betwixt the Car-Nicobar and the Little Andaman: from thence, she made a good passage to St. Helena.*

The Camden, from Prince of Wales's Island in 1805, could not get out to sea between Pulo Rondo and the Nicobars, owing to light winds, and currents setting into the strait; and she was obliged to bear away on the 5th of November, for Prince of Wales's Island, to get an additional supply of provisions.

The Rockingham and fleet, having arrived at Achen by the Surat Passage, remained there 8 days procuring water and other necessary supplies. On the 15th of November, 1800, she sailed from thence through the Bengal Passage, with a current setting out of it, and on the following day (having been close hauled with the wind at W. S. W. and S. W.) made the Nicobar bearing W. ½ N. distant 8 leagues, the current having run 44 miles to the N. Eastward during the 24 hours.

In the entrance of Malacca Strait, near the Nicobar and Achen Islands, and betwixt them and Junkseylon, there are often very strong Ripplings, particularly in the S. W. monsoon; these are alarming to persons unacquainted, for the broken water makes a great noise when a ship is passing through the Ripplings in the night. In most places, Ripplings are thought to be produced by strong currents, but *here* they are frequently seen when there is no perceptible current. Although there is often no perceptible current experienced, so as to produce an error in the course and distance sailed, yet the surface of the water is impelled forward, by some undiscovered cause. The Ripplings are seen in calm weather approaching from a distance, and in the night, their noise is heard a considerable time before they come near. They beat against the sides of a ship with great violence, and pass on, the spray sometimes coming on deck, and a small boat could not always resist the turbulence of these remarkable Ripplings.

## 2d. MONSOONS; CHANNELS ALONG THE WEST COAST OF SUMATRA; AND SAILING DIRECTIONS FROM ACHEN HEAD TO BANCOONGONG BAY.

West Coast of Sumatra. FROM KING'S POINT, the general direction of the West Coast of Sumatra to Flat Point, its southern extremity in lat. 5° 55′ S., is about S. E. ½ S., and the distance 294 leagues, the equator dividing it nearly in equal parts. Numerous small islands, and dangerous shoals, are interspersed along different parts of this extensive coast, and a chain of large islands farther out, stretches parallel to it, at the distance of 18 or 20 leagues, between

Periodical Winds. some of which islands, there are safe channels. The winds are here, denominated the S. E. and N. W. monsoons, agreeably to the direction in which the periodical winds are expe-

* Captain Williams, of the Thames, observes, that notwithstanding he beat down the China sea against the S. W. monsoon in August and September, had he not lost much time endeavouring to work round the islands off Achen Head, he most probably would have reached St. Helena as soon as the ships which left China about 2 months before him, and pursued the eastern route.

rienced to blow in South latitude, but they are subject to great irregularities on this coast, on account of the numerous islands in its vicinity; and the 2 extremities being far distant, on different sides of the equator, the same winds cannot be expected at all times to prevail along the whole of the coast. Whilst the North part of the coast enjoys fine weather from October to April, N. W. winds with rain and squally weather, prevail on the South part; and in the opposite season, when the S. E. monsoon is blowing on the South part of the coast, the N. W. monsoon prevails with squalls and rain, close to the coast in North latitude; but outside of the islands, in the open sea, the wind is then generally between South and S. W.

S. E. monsoon.

THE S. E. MONSOON, or dry season, generally begins in May and continues till October. In this season, when the southerly winds blow more steady and with greater force than usual, which is from June until late in September, there are no land breezes; at other times, brisk sea breezes prevail from S. W. and Southward in the day, and variable breezes from the land, or from the northward, in the night. Ships coming from sea in this monsoon, should if bound to Bencoolen or any other place well to the southward of the equator, endeavour not to fall in with the coast to the northward of their port, for several days may be lost in reaching it, when the southerly winds prevail. The Herculean bound to Bencoolen, fell in with the Poggy Islands so late as the 18 of September, 1803, and was 7 days getting to that place, the winds constantly from S. Eastward.

To approach the coast in that season.

Although the S. E. or Southerly monsoon prevails most on this coast to the southward of the equator, *North-westers* are liable to blow for a few days at times, particularly about the full or change of the moon.* These North-westers are more common in North latitude, with southerly currents and frequent calms, rendering the navigation by the Inner Passage close along the coast, very tedious and troublesome; more particularly, as ships are in many places, obliged to anchor in the night on account of surrounding dangers; and in the day, by the prevalence of faint breezes, calms, and contrary currents.

N Westers render the inner passage tedious when bound northward.

The Royal George bound to Malacca Strait and China, left Padang on the 1st of July, 1803, and proceeded along the coast by the inner passage; she made very slow progress, N. W. winds and southerly currents made anchoring so often indispensible, that it was the 12th before she reached the equator, and the 6th of August, when she got to Achen Head.

The Frigate Bombay, and Lady Castlereagh, in company, in 1804, were all July and part of August, getting from Bencoolen along the coast to the northward by the inner passage; and the latter ship struck on 1 of the rocky shoals about 10 miles off shore, in lat. 3° 4′ N.

THE INNER PASSAGE, has been generally recommended to navigators, but it certainly ought not; probably no ship should adopt it, unless when trading at different places on the coast, and it should seldom be chosen by ships bound to the northward in either monsoon. The Outer Passage, to the westward of all the islands, in the open sea, is far preferable; for there, S. W. and southerly winds often prevail, when N. W. squalls and variable baffling winds may be experienced close to the land.

The passage outside the islands preferable.

The Arniston, bound to China by Malacca Strait, left Bencoolen, on the 25th of June, 1802, stood directly to the westward into the open sea, where she got brisk southerly winds, which enabled her to pass Pulo Rondo on the 8th of July. Had she proceeded close along the coast, her passage might have been greatly prolonged, as happened to the ships mentioned above.

We were in the King George from the 26th of July to the 11th of August, 1791, getting

* The N. Westers sometimes blow strong between Bencoolen and the entrance of Sunda Strait in December and January. The Rochester, and King William, were obliged to ride 3 days with topmasts struck, from the 15th to the 18th of January, 1717, during a violent North-wester, about 14 leagues to the southward of Bencoolen.

from Pulo Rondo to the equator, when bound to Bombay by the Southern Passage; the winds in the open sea to the westward of the islands, being then constantly between S. W. and South.

N. W. monsoon.

N. W. MONSOON, prevails on the West coast of Sumatra, (particularly in South latitude) from October to April; in some seasons N. W. winds begin early in October, but from this month to the middle of January, they generally blow strongest, attended often by much thunder, lightning, and rain. In March, the hard rains abate, and the weather becomes more favorable. When the land and sea breezes prevail on this coast, which may happen at times in either monsoon, the sea breeze sets in between 10 A. M. and noon, subsequent to a calm, and declines with the setting sun. The land breeze begins early in the night, and continues until 8 or 9 o'clock in the morning, subject to many irregularities. To the southward of the equator, unsettled land winds, squally weather and rain, prevail greatly in the night during the N. W. monsoon; with sea breezes at N. W., W. N. W., or West, in the day, veering to W. S. W. and S. W. about the middle of March, or early in April.

Land and sea breezes.

In most parts of India to the northward of the equator, the N. E. monsoon prevails when the sun is in the southern hemisphere, but on the West coast of Sumatra, it is changed to a N. W. monsoon by the direction of the land. From December to April, the weather is often settled and fine in North latitude, with land and sea breezes; at other times, particularly in the springs, N. westers prevail, which blow stronger than any other winds upon this coast. They generally produce a considerable sea, rendering it precarious to ride at anchor in any of the *open* roads on the coast, when they blow strong; and it is very difficult to work to the northward, whilst they continue in force.

Alfred made little progress to the northward, inside the islands.

The Alfred, bound to Prince of Wales' Island and China, left Bencoolen, on the 22d of October, 1807; having a southerly wind at the time, Captain Welstead steered to the northward, intending to pass out into the open sea between the North end of Se Beroo and Pulo Mintao. The wind shifted to N. westward, with frequent hard squalls, much rain, intervening calms, and southerly currents; with this unfavorable weather, very little progress was made to the northward, and many of the people being disabled from duty by the heavy rains, they were obliged on the 29th, after 7 days loss of time, to bear away, and pass out, round the southern limit of the islands, opposite to Bencoolen.

Outside passage seems preferable.

It seems advisable at all times, for large ships bound from Bencoolen to Malacca Strait, to steer to the westward outside of all the islands, where in both monsoons, they will certainly get much quicker to the northward by keeping in the open sea, than by following any of the routes inside of the islands.

Current.

THE CURRENT on the West coast of Sumatra is influenced greatly by the winds, and seldom runs to the northward, in either monsoon, except when the wind is blowing strong from southward, which will happen at times, particularly in South latitude. When N. westers prevail, the current runs with the wind to the S. eastward, and it generally sets in this direction along the coast in both monsoons, particularly in North latitude. To the northward of the equator, when the current is setting to the southward betwixt the coast and the islands, it is frequently at the same time running to the northward, in the open sea, far outside of them. In October, November, and December, it is generally tedious getting to the northward, particularly from the equator to Achen Head, for baffling N. W. winds and southerly currents, are often found to extend a great way out from the coast in these months, particularly in the channels among the large islands in the offing, the current sets to the South, and S. Westward.

To the southward of the equator, when at times the southerly winds blow with considerable strength from June to October, a drain of current is impelled to the northward, at which times it is rather tedious and difficult to work to the southward along the coast.

The rise of tide on most parts of the coast does not exceed 2 or 3 feet in the springs; and

in places not far distant from the equator, it is high water about 6 hours at full and change, or when the moon is in the horizon. There is generally a considerable surf on most parts of the coast, which is highest in the southerly monsoon, during the spring tides.

THE CHANNELS, or ROUTES, along the West coast of Sumatra, may be considered as 3 in number. That to the westward of all the islands in the open sea, recommended as the best at all times, has been described above, as the OUTER PASSAGE. The space between the chain of large islands in the offing, and those smaller islands contiguous to, and interspersed along the coast, may be called the MIDDLE PASSAGE, which is generally from 4 to 10 leagues distant from the shore of Sumatra, and is connected with the INNER PASSAGE in some places. This route should not be followed when bound to the northward, nor at any time, if it can be avoided without inconveniency, for ships are liable to be drifted about by currents when the winds are faint and baffling, there being no anchorage; and in some parts toward the main, dangerous coral shoals from 1 to 2 and 3 fathoms under the surface, shoot up from deep water at the edge of soundings. The Inner Passage, close along the coast, and betwixt some of the islands near it, having in many places moderate depths for anchoring occasionally, is preferable to the Middle one; but on account of the numerous small islands, and many dangerous shoals, the true positions of which are not correctly determined, it is to persons unacquainted, an intricate and embarrassing passage, and should only be adopted by vessels trading to different parts of the coast. Ships proceeding by it are generally obliged to anchor during the night, but the Middle Passage being wide, with few dangers, they may run in it night or day, when the weather is clear and favorable.

The channels or routes parallel to the coast.

Dangerous shoals.

It has been said, that all the shoals on this coast are ***white*** coral rocks, discernible from the mast-head a mile off in the day time, even when they are 3 fathoms under water. This is certainly a great mistake, for many of the shoals consist of ***black*** rocks, not discernible until close to them, although covered only with 8 or 10 feet water. Several ships have, therefore, grounded upon these shoals in the day time, before they could be perceived. A good look out from the mast-head is nevertheless useful, particularly when the sun shines, for many of the dangers will then be discernible before they are approached very close.

Ships bound to parts of the coast situated betwixt Bencoolen and Tappanooly, may in coming from sea, pass through some of the channels formed by the principal islands in the offing, adopting a safe and convenient one, according to the season and prevailing winds: an account of these channels will be found in one of the following sections where the islands are described. Ships bound to the northern part of the coast, any where betwixt Tappanooly and Achen Head, should pass to the northward of Hog Island, and make the land near to their port; but when northerly winds prevail, they ought to keep well to windward, and after making the land, coast along at a moderate distance to the place to which they are bound.

How to steer for the coast in coming from seaward.

FROM the land of ACHEN HEAD, the coast extends about 4 or 5 leagues nearly S. ½ E., to a cove on the North side of a small point of land called Siddo Harbour, where cattle may be obtained; and from 12 to 25 fathoms are good depths to preserve in coasting along. Off this place, and to the northward, lie some rocky islets at a small distance, the largest of which is called Pulo Roosa; and 3 leagues farther southward, lies Saddle Island, with contiguous rocks above water, distant 1 or 2 miles from the shore. There is a peaked hill inland, to the eastward of Saddle Island, and 2 bays between it and Siddo Point. The coast is low near the sea, to the southward of Saddle Island, and extends about S. by E. 10 or 11 leagues to a point of land with an inlet and 2 hills near it to the eastward, 1 called Roosam Hill or China Hat, and the other Cleft Hill, from their appearance. Several isles extending to lat. 4° 30′ N., are interspersed along this part of the coast, about 1 or 2 miles off shore, with 15 and 20 fathoms water near them. Cocoanut Island, about 2 leagues to the northward of the Point, is the largest, and that called the Cap, lies farther

Coast from Achen Head southward.

out, being about a league to the S. W. of the Point, with apparently a safe passage between it and a group of islets surrounding the Point.

From lat. 5° 0′ N., to 4° 55′ N., there is a coral bank about 4 or 5 leagues off shore, said to have 5 fathoms water on it, and 30 fathoms close to it all round. This seems to be the rock bank, which Capt. Bennet says, bears about N. W. from Pulo Roosa, with only 4 fathoms rocks on it in some places, and that he had passed over it several times in a small vessel.

Analaboo. ANALABOO, or NALABOO, in lat. 4° 8′ 32″ N., distant about 7 or 8 leagues to the S. East of Cap Island, may be known by a grove of cocoanut trees on the point that forms the North side of the road, appearing like an island when first seen, the land being low along this part of the coast. A ship may anchor here with the point bearing about N. W. in 7 or 8 fathoms, on the South side of a reef that projects a considerable way from the North side of a small rivulet, and procure fresh water, or other refreshments. Capt. Bennet says, you may anchor in 5 fathoms with the Point of Cocoanut Trees W. ¼ S., distant about ½ a mile. A reef projects ½ a mile from the point, with only 5 feet water on it, and the sea does not break over it except in blowing weather.

Soundings. The soundings from the land of Achen Head to Cap Island, are in some places irregular over a rocky bottom, the depths generally 18 to 30 fathoms from 1 to 3 leagues off shore. In this space, ships should keep 2 or 3 leagues from the land in the night, to give a proper birth to the rocky isles scattered along the coast. From Cap Island to Analaboo, the soundings are more regular, and the bottom soft; here, a ship may approach the shore occasionally to 11 or 12 fathoms.

From Analaboo to Cape Felix or Oujong Rajah, the course is S. E. ½ E. to S. E. by S., distance 11 or 12 leagues, and the coast may be approached to 11 or 12 fathoms, from 2, to 7 or 8 miles off shore: near Cape Felix, the water deepens suddenly to 26 or 28 fathoms, and the coast trends from it eastward to Soosoo.

Geo. site of Cape Felix. CAPE FELIX,* in lat. 3° 46′ N.,* by noon observation taken in the Royal George, on the 1st of August, 1803, about lon. 96° 2′ E., is a low level headland, bearing from Soosoo town

Soosoo Bay. W. ½ N., distant 4 or 5 leagues,† and forms the western extremity of the bay. The cape is bold to approach, but the bay of Soosoo contains several dangerous shoals, covered with 1, 2, and 2½ fathoms water; there is also much foul ground in it, with overfalls from 20 to 10 fathoms, but the channel is wide and safe between the shoals on the West side of the bay,

To sail into the road; and those to the southward of Soosoo Point. A ship bound into the road, after coasting along about 2 or 3 leagues off, in 28 to 35 fathoms, when the road is approached, ought to keep a boat a-head to sound, if unacquainted, and steer in with Soosoo Point or the entrance of the river, bearing about N. E., or the town N. E. ½ E. Pulo Kio, a small point close to the beach, lies 1½ or 2 miles to the westward of Soosoo Point, and resembles it when first

anchorage. seen; it has the appearance of an island. A ship may anchor in 18 or 20 fathoms, with the houses of Soosoo N. E. by E., about 2 miles off shore; or by choosing a clear birth with the boat, she may move into 9 or 10 fathoms near the entrance of the river, and anchor with Soosoo Point E. N. E. Soosoo Point, appears with 2 or 3 trees close to the houses, like a small island; steering in with it about N. E. ½ E., a tall tree near the middle of the bottom

* Capt Bennet, by several observations made it in lat. 3° 43′ N. Arrowsmith has placed this Cape in lat. 4° 0′ N., and Heather in 4° 19′ N., and De Apres in 4° 39′ N.; so discordant are the situations assigned to it by hydrographers, arising from a want of correct observations. It is, indeed, difficult and perplexing, to approximate the true situations of many places on this coast, or those of the islands in the offing; as they are little frequented by navigators of much science, the chance of acquiring correct materials is almost precluded; and as no regular survey of the islands, or the coast to the northward of the equator has been made, our knowledge there, is consequently very imperfect.

† Capt. Bennet says, it is 7 leagues distant from Soosoo, bearing W. ¼ N.

of the bay will be seen, which bring N. E. ½ N., and steer direct for it until in 10 or 11 fathoms soft ground, then anchor within a ¼ of a mile of Soosoo Point. The Royal George at anchor in 18 fathoms, had Cape Felix W. ½ N., the southernmost extreme of the land S. E. by S., and Soosoo town E. N. E., distant about 1 mile: Soosoo town is in lat. 3° 43′ N.

This place is much frequented by small ships that come here to procure pepper and other articles of trade, but it is prudent to be always guarded against the perfidy of the natives, who have been several times successful, in assaulting and taking possession of the ships that came to trade with them.

MUCKAY, in about lat. 3° 23′ N, is a small place where the coasting vessels stop at times to trade: if bound into this place, and being 4 miles off shore, bring the small bay of Muckay to bear N. E., and steer for it on this bearing; it is clear of shoals, but the anchorage is not very good if you go within the N. W. point. Muckay.

There are 2 shoals off Muckay in 23 fathoms, distant about 2½ and 3 miles from the shore, and bearing North and South of each other. A course S. W. from Muckay will carry you out between the shoals, and when in 27 fathoms you are outside of them.

The course from Cape Felix to Muckay is S. E. by E. ½ E., in which track do not come under 27 fathoms water, as there are several dangerous shoals within this depth, and also many on the outside, some of which are dangerous.

TUMPAT TUAN POINT, the southern extreme of the high land seen from Soosoo, distant from it about 7 leagues, some navigators place in lat. 3° 30′ N., but Capt. Bennet, states it to be in lat. 3° 15′ N. Near this, lies Tellapoe Road in lat. 3° 21′ N., by the observations of Mr. James, who touched here in 1814, while trading along the coast; and another place called Labanacky, he made in lat. 3° 20′ N. Tumpat Tuan, and other places.

Along this part of the coast between Achen Head and Soosoo, the weather is generally settled and fine in the northerly monsoon, with frequent land and sea breezes. There is a shoal 1½ mile off the first point north of Labon.

POINT LABON, in about lat. 3° N., is nearly 17 leagues to the S. E. of Cape Felix, and in sailing between them, great care is requisite to avoid several shoals interspersed along the coast. The Lord Castlereagh struck on one of them in lat. 3° 4′ N., distant about 10 miles from the shore, and had no ground 40 fathoms close to it. This seems to be the shoal called Lagootsong by the natives, bearing S. W. from Tumpat Tuan Point, with only 10 feet water on its shoalest part, as stated by Capt. Bennet, who struck on it in one of his voyages from Bengal to this coast. Betwixt lat. 3° and 3° 50′ N., he was very close to several other shoals, before they were observed. In lat. 3° 30′ N., the Royal George passed over the tail of a shoal,* in 6 fathoms, when the rocks were seen along side; a little outside of it, they had no ground 85 fathoms, and 45 fathoms close to it on the inside; the depth from thence decreased gradually to 26 fathoms steering N. by W. toward Soosoo Bay. In lat. 3° 14′ N., there is another shoal with 4 fathoms or less water on it, and 20 fathoms at a small distance inside: when at anchor on it in 5 fathoms, the extremes of the coast bore from N. N. W. to S. E. by E., and the White Rock N. N. E. ¾ E., distance off shore about 3 leagues. Point Labon; dangerous shoals from thence southward.

There is a rock in lat. 2° 47′ N., about 4 leagues off shore, said to have been seen by Captain Burgh, in the ship Bergen; when near it, the northern extreme of the land bore N. W. by N., a mount with a circular projecting top N. E. by N., and another hill E. ½ N.

* This appears to be the same bank on which the Albion had 5 fathoms in lat. 3° 30′ N., and 4 or 5 leagues off shore; she hauled to the S. W., and soon deepened to 50 fathoms no ground.

Bancoongong Bay. BANCOONGONG BAY, about 8 leagues to the S. Eastward of Point Labon, where ships may lie sheltered from N. Westers, has some rocks off its western extremity; and there is a shoal on the edge of soundings, about 3 or 4 leagues to the southward. The river and village of Bancoongong in lat. 2° 47′ N., may be known by 2 small islands called Pulo Duo and Pulo Kays, situated near the river's mouth; there is also a mountain close to the sea, nearly as high as the others, which is formed like a saddle, with the highest end to the southward, and Bancoongong lies close under its northern end. A large ship may anchor in 15 fathoms soft ground about ½ a mile off shore, with the entrance of the river bearing N. 22° E., where she will be well sheltered from N. W. winds: vessels sometimes touch at this place to trade, there being a river and village on the East side of the point.

Sebadies, There is a shoal 2 miles S. S. E. from Pulo Duo; but off the village Sebadies, which lies East 2 miles from Pulo Duo, there is good anchorage in 12 fathoms 1 mile from the shore, sheltered from N. W. winds. If bound into this road, and being about 3 miles off shore in 25 fathoms, bring the village Sebadies to bear N. by E., steer in with this bearing, and anchor in 10 or 12 fathoms, the village N. by E., 1 or 1½ mile, and Pulo Duo, about W. by N. 2½ or 3 miles.

and other places. Bancoongong lies 3 miles to the N. N. W. of Sebadies: Touroumang is 4 or 5 miles to the E. S. E. of Sebadies, where a vessel may also anchor; a little farther to the S. Eastward lies Songi Tanjang Bay, rocky and dangerous.

## 3d. DIRECTIONS FOR SAILING ALONG THE COAST FROM BANCOONGONG TO PADANG; ADJOINING ISLANDS AND SHOALS. ALSO DIRECTIONS TO SAIL FROM PADANG TO THE NORTHWARD.

General remark for sailing to the southward. IN sailing from the northward, ships bound to Sinkel, or other ports North of the equator, ought to proceed by the Inner Passage between Pulo Banjack (or Baniak) and the main, and near to Passage Island. The land between Bancoongong Bay and Cape Sitoe, is mostly low near the sea, and hilly inland.

In coasting along, a ship may keep about 3 or 4 leagues from the shore, to avoid the shoals, and when Passage Island is seen, she should steer toward it. Within 2 miles of the main,

A rocky shoal, with Baniak Peak bearing W. S. W. about 7 leagues, there is a rocky shoal having only from 2 to 3 fathoms on it in some parts, with a safe channel of 8 and 9 fathoms between it and the Sumatra shore.

Passage within it. Of this channel close along the coast, inside of the rocky shoal, the Cadogan's journal gives the following description. December 5th, 1729, passed in 8, 9, and 10 fathoms regular soundings within a mile of the shore, between Cape Sitoe and the rocky shoal which lies off it, and at times could see a small breaker on the sunken rocks, which appeared to be 2 miles distant from the Cape, and makes this passage probably safer than the other between the shoal and Passage Island, because you may venture within ½ a mile of the shore, although some charts erroneously place a sand projecting out a great way from the cape.

Passage Island, PASSAGE ISLAND, called Java Javee by the natives, in lat. 2° 21′ N., about 3 leagues to the westward of Cape Sitoe, is low and sandy, with few shrubs, but 1 large tree of the Banian species, may be seen at a great distance, and the island may be discerned from the deck 4 or 5 leagues in clear weather.

the adjacent channel, and dangers. The channel between the coast of Sumatra and Passage Island, is rendered intricate by the dangerous shoals mentioned above, with only 2 and 3 fathoms rocks on them in some places, situated nearly midway betwixt the island and the main. Although there is a safe

passage inside of these shoals, by keeping close to the Sumatra shore, yet many prefer the channel between Passage Island and the shoals, which is commonly adopted.

To sail through the channel, from the northward.

In steering for this channel, a ship should keep about 3 leagues off the coast until Passage Island is seen, then steer toward it, observing never to bring it more easterly than S. E., to prevent getting too near the shoals and irregular soundings that project from its outside to a considerable distance; 1 of which shoals is said to be 3 or 4 miles W. N. W. from the island. Having approached Passage Island within 3 miles, bring it to bear S. E. by S., or to the S. S. Eastward, and when $\frac{3}{4}$ or $\frac{1}{2}$ a mile off it with these bearings, it will be prudent to keep about the same distance in sailing along its eastern side, but not more than $\frac{3}{4}$ of a mile from it, to avoid the shoals situated midway between it and Cape Sitoe: on account of these, the island must be borrowed upon, but not under $\frac{1}{2}$ a mile, for the flat is dry all round to the distance of a cable's length at low water, and projects about a $\frac{1}{4}$ mile, or rather more in some places, but is not visible at high water. By preserving the distance mentioned, the soundings will be pretty regular, and the depths never less than 10 and 12 fathoms, mostly rocky bottom. When Passage Island is in one with the Peak of Baniak they bear S. W. by W. $\frac{1}{2}$ W., and it cannot be mistaken, there being no other island betwixt it and the main. A good look out from the mast-head is requisite when passing through this channel, as the coral shoals may be discerned in clear weather, but the flat surrounding Passage Island cannot be always distinguished. When through the channel, which is about a mile in length, the island must be kept between N. N. W. and N. W. by N., in steering from it to the southward, where a ship may anchor if the wind or tide is unfavorable; but to the northward of the island do not anchor under 20 fathoms, for the ground there is rocky under that depth.

and from the southward.

From Sinkel Road to Passage Island the course is N. W., and in coming from the southward, when Passage Island bears S. W. you are at the entrance of the channel, steer N. W. in 12, 13 and 14 fathoms, and pass on the east side of the island at the distance of $\frac{3}{4}$ of a mile: if you borrow under $\frac{1}{2}$ a mile, the waters shoals suddenly from 11 or 12 to 6 fathoms on the edge of the reef that surrounds the island.

Channel between Passage Island and Pulo Baniak.

Capt. Bennet, states, the channel between Passage Island and Pulo Baniak to be nearly 5 miles wide, and clear of danger by keeping over to the Baniak shore, as rocky shoals lie to the westward of Passage Island, which were formerly said to preclude any safe passage between them and Baniak; but he asserts, that this passage is now frequented by experienced traders to the coast, when bound to the southward.

Sinkel River and Road.

SINKEL RIVER, in lat. 2° 13′ N.,* about 5 leagues to the S. Eastward of Passage Island, and subject to the king of Achen, was formerly a place of considerable trade, the principal exports, benzoin, camphor, wax, and gold. A ship bound to this place, should, after leaving Passage Island, steer about S. S. E. or S. E. by S., taking care not to bring the island to the westward of N. W. by N., by keeping 6 or 7 miles from the main; the shoals between them will then be avoided, and having brought the low point on the North side of Sinkel River, (which is covered with palmira trees) to bear about E. by N., she may haul in and anchor in from 12 to 17 fathoms, with the mouth of the river N. E., distant 1 mile. Sinkel Road is inside of the reef that lies to the S. E. of the river.

Breakers project a little way from the points that form its entrance, and the town is well up, but when a ship is known to have anchored to trade, the merchants will come off to her. No person should be permitted on board, except the principal merchants, deprived of offensive weapons, and caution is requisite to repel or prevent any attack that the natives may be inclined to make. A snow belonging to Bengal, was cut off here in 1782, since which time few European traders have touched at this place, but it is said to be in a reviving state, by such persons as visited it lately.

* 2° 11′ N., by Capt. Bennet's observations.

Se Leaga Bay.

SE LEAGA BAY, about 3 leagues eastward from the mouth of Sinkel river, is sometimes chosen by ships trading to Sinkel, on account of the shelter there. Ships bound into

To sail into the latter place.

it, may steer from Sinkel Point along the coast at a moderate distance to the West point of the bay, taking care to avoid a shoal or rock, said to lie in 20 fathoms, S. W. from the island in Se Leaga Bay. Oojong Rajah, the West point of the bay, has a long flat projecting about 2 leagues, which may be crossed about 3 miles from the shore in 8 or 9 fathoms hard ground, and when the bottom becomes soft to the eastward of it, they should haul up N. N. E., and pass on the West side of a low sandy island, where they may anchor between it and the western shore. If to remain a considerable time, a ship ought to run into 5 fathoms mud, and anchor on the West side of the small island Se Leaga, which is covered with trees; here, she will be sheltered by the land from westerly winds, and from S. E. winds by the reefs of breakers in that direction, at the entrance of the bay.

Islands and shoals from hence to Baroos.

Several islands and shoals are scattered along the coast from hence to Baroos, and there are some places on it, such as Bankole and Tapoos, frequented by the small trading vessels. The land in this space is generally low near the sea.

Pulo Lacotta, and Bird Island.

PULO LACOTTA, in about lat. 1° 44′ N.,* distant 9 or 10 leagues from Sinkel river, is a small low island, covered with trees; having at 4 miles distance, bearing N. by W. from it, a low islet or sand bank, in about 36 fathoms water, called Bird Island, from being a place of refuge to the feathered race, and is not discerned farther than 3 leagues. A reef projects from it about 1 mile to the N. W. and S. E., and about 3 miles to the N. W. of it, (some say 3 leagues) there is a coral shoal, which must be avoided. A ship departing from Sinkel, should steer out into 23 or 26 fathoms, then S. Eastward for Bird Island, which may

To sail from Sinkel to Baroos Road.

be approached on the North side within 1 or 1½ mile. The water deepens near these islands, but the soundings are not every where regular, and 34 fathoms is too close to Bird Island; the best track to keep, is from 26 to 30 fathoms water. Great prudence is requisite to pass them in the night, which should only be done in clear favorable weather, taking care not to borrow nearer to the shoals fronting the coast than 27 fathoms, nor too close to Bird Island, on account of the shoal to the North westward, and another betwixt it and Pulo Lacotta. Having passed Bird Island, a ship may haul in E. by S. and East for the main land, and pass Pulo Carangua, a small island covered with trees, at 2 miles distance on the South side, or less if requisite, and anchor in Baroos Road in 10 fathoms mud, with the Flagstaff N. N. E. near 2 leagues, and Pulo Carangua W. N. W. about 2 or 3 miles.

Baroos.

BAROOS, in about lat. 1° 56′ N. is a place of some trade, the principal exports camphor and benzoin; good fresh water may be procured, but it is dangerous for a ship's boat to enter the river, except 1 of the natives is used as a guide. Wood and water may also be got at Pulo Lassey, about 2 leagues to the N. W., near the West point of Tapoos Bay, by anchoring under that island, with it bearing N. W. by W. about a mile.

To sail from it to Tappanooly Bay.

The course from Pulo Carangua to Pulo Sokum is S. E. by E. about 6 leagues; in sailing toward Tappanooly Bay the channel between Mensular and the main is about 3 leagues wide, with regular soundings, and safe to sail through at all times, there being good anchorage. The only known† danger is a shoal of coral rocks with 9 feet water on it, situated about 3 miles off the main, and 4 or 5 miles N. W. ½ W. from Pulo Sokum, or ⅔ of the distance from it toward Battoo Barroo Point, which is of considerable height, and forms

* By noon observation, 9th October, 1814, Capt. Henderson of the Resourse, made it in lat. 1° 50′ N. He passed within 2½ miles of Bird Island, and got *no* ground with 30 fathoms of line.

† There is said to be a coral shoal, about mid-channel between Mensular and the main, with only 3 or 3½ fathoms on it, the situation of which is not correctly known. Pulo Sokum is the first small island on the coast to the northward of Tappanooly.

the western extreme of Tappanooly Bay. This shoal is small, said to bear W. N. W. from Battoo Barroo Point, and lies in 9 or 10 fathoms, so that a ship should not come under 12 or 13 fathoms until near the point, which is distant about 6 leagues to the E. S. Eastward of Pulo Sokum; she may then round the point in 9 or 10 fathoms, keeping it pretty close aboard, and the Island Ponchang Cacheel will be seen to the N. N. Eastward, which is the nearest island to the point. This island may be passed on either side as most convenient, and after bringing it to bear about S. W., or the hill on which the colours are hoisted S. by W. ½ W., she may anchor in 7 or 7½ fathoms soft ground, about a cable's length from the island, and carry a hawser on shore to steady her, where she will be land-locked.

Geo. site of Tappanooly.

TAPPANOOLY BAY, forms an extensive harbour, or is rather subdivided into many coves or harbours, by the different islands in it, where ships may lie sheltered from all winds. Ponchang Cacheel, a little inside of the entrance, where ships generally moor, is an English settlement situated in lat. 1° 40′ N., about lon. 98° 40′ E.; between it and Pulo Panjang, the next island to the northward, there are 7 and 8 fathoms in a passage about ½ a mile wide. On the East side of Panjang, the harbour is spacious, the depths from 7 to 4 fathoms, with a watering place on the main to the northward: there is also good shelter to the westward of the same island, but reefs project from the North end of it and the adjoining shores, and also from the other islands beyond it, in the northern arm of the bay; notwithstanding, there are safe passages and good shelter among them, in depths from 3 to 5 fathoms.

The village of Tappanooly is at the northern part of the bay, about 4 miles from Ponchang Cacheel; from thence, this extensive bay is continued to the westward, by a narrow channel that opens into a large lagoon, with depths in it from 2 to 3 fathoms.

Ponchang Gadang, on the East side of the entrance of the bay, is the largest island in it, and has some steep hills covered with large timber; near the foot of these, there are several springs of fresh water. The passage betwixt this island and Ponchang Cacheel is a mile wide, with 6 or 7 fathoms close to either island, and 10 fathoms in mid-channel; between these 2 islands and Pulo Seeroodoot, situated about 1½ mile to the N. Eastward, the depths are from 7 to 9 fathoms, regular soundings, and the channels safe. There is good anchorage near the N. E. side of Ponchang Gadang, in 7 or 8 fathoms, to the eastward of a small island off its North end; around which, and the West, South, and East sides of Gadang, a reef projects some distance. An excellent cove stretches into the land to the eastward of Pulo Seeroodoot, having 4 and 5 fathoms water inside, and the same depths in the entrance, between the South end of that island and the main-land.

Island Mensular, and harbour.

MENSULAR, or MASSULAR, in lat. 1° 32′ N. is about 4 leagues in extent East and West, situated to the westward of Tappanooly Bay: it is a high island with several inlets on the North side, and contiguous to its S. E. end there is a group of islets which form a harbour, with various depths in it from 22 to 14 fathoms, over a bottom of soft white mud; and between the entrance and the group of islands near it to the southward, the depths are from 24 to 30 fathoms, in 2 safe channels leading from the eastward, and S. Westward. This harbour furnishes excellent fresh water, and the surrounding land of Mensular and adjoining islands, abound with poon spars, fit for masts or yards of any size that may be required. It is high water at 6 hours on full and change of the moon, the rise of the tide only about 4 feet. At the North-west end of the island, there is a considerable waterfall, which issues from a high hill. If a ship coming from the northward is not bound to Tappanooly, she may, after passing Bird Island, steer for the N. W. end of Mensular, and proceed along the West side of it, which is a bold shore; but she ought not to stand far out, on account of Pulo Doa and the adjacent shoals. These are a larger and smaller isle, with some dangers near them, distant 3 and 4 leagues to the S. W. of Mensular; other dangers lie to the north-

To sail between it and the islands and shoals in the offing.

ward, between them and Pulo Lacotta, which are avoided by keeping well to the eastward after passing Bird Island.

Sugar Loaf; to sail from Tappanooly Harbour by the southern channel.

SUGAR LOAF, (called Nassy See Tounkas by the Malays) a small conical island bearing S. S. W. 9 miles from Ponchang Cacheel in Tappanooly Harbour, is the leading mark for ships bound out of that harbour to the southward, it being conspicuous, and is the southernmost of the islands in the south part of the Great Bay of Tappanooly, situated nearly mid-way between Batoo Mama, the southern extremity of the Bay, and the East end of Mensular. To the eastward of the Sugar Loaf, betwixt it and Batoo Mama Point and Pulo Baccar, the nearest island to the N. Eastward, there is an open passage, with soundings from 14 to 19 fathoms; but as a rock lies betwixt the point and Baccar, on the East side of this passage, and from the N. W. side of the latter, likewise from the N. E. side of the Sugar Loaf, reefs project about a cable's length, the passage to the westward is generally preferred.

Departing from Tappanooly Harbour, a ship should steer about S. S. W. for the Sugar Loaf, which may be passed on either side; but the western channel betwixt it and the entrance of Mensular Harbour, is the best, being nearly 5 miles wide, with regular soundings 22 and 23 fathoms from side to side; the Sugar Loaf being steep at the West end, with 21 and 22 fathoms close to it. When abreast of it, a southerly course should be steered until in 25 fathoms, observing not to bring it to the westward of North till this depth is obtained, to avoid a shoal of coral rocks, *said* to lie about 3 or 4 miles to the S. East of it.

Pulo Ely.

PULO ELY, or ILLY, an island near the main, about a mile in length, moderately high and even, bears from the Sugar Loaf about S. by E. $\frac{3}{4}$ E., distant 6 leagues; from 26 to 22 fathoms, are good depths to preserve in coasting between them, and Pulo Ely may be passed in 18 or 20 fathoms, or farther off in 24 or 25 fathoms, distant from it 4 or 5 miles. There is anchorage under this island, and it affords wood, and good water.

Zelody Islands, to sail clear of the shoals on this part of the coast.

ZELODY* ISLANDS, (the northernmost,) are about 5 or 6 leagues to the southward of Pulo Ely; in passing along here, 24 and 25 fathoms are good depths to preserve, and as the outermost Zelody Island is a considerable way from the main, with 20 or 21 fathoms near it, a ship ought to give it a birth of 3 or 4 miles, to avoid the shoals in its vicinity. There is anchorage and shelter under these islands (being 3 in number) from N. Westers, with good water and cocoanuts upon them; but the coast between them and Cara-cara Point, is generally avoided, there being several shoals at a considerable distance from it; with Pulo Tellore, and Pulo Capechong, 2 small islands lying in the bight inside of them. One of the outermost and most dangerous of these shoals, on which the Syren struck, bears S. $\frac{1}{2}$ E. distant $3\frac{1}{2}$ leagues from the outer Zelody Island, having only 7 feet water on it, and is not always visible in fine weather. There is a passage inside of it, with anchorage, by keeping in 14 and 15 fathoms, but that on the outside is preferable. To avoid it, a ship after passing the Zelody Islands at 4 or 5 miles distance, should steer to the southward, observing to keep the outer island to the eastward of North, and not to come under 23 or 24 fathoms soft ground, until Cara-cara Point bears about E. S. E., which will carry her 2 or 3 miles outside of it, as the shoal lies in $20\frac{1}{2}$ fathoms water.

Natal Hill, situated on the North side of the river, appears like a gunner's quoin when it bears S. E. by E., and may be known by its barren aspect, and having low land on each side; after it is seen, it ought to be kept open with Cara-cara Point, to avoid the shoal, and a ship if not bound into Natal, should keep out in 21 or 22 fathoms in passing the shoals that front the bay. There is a coral bank about 7 leagues off Mensular, on which the

* Properly Keladee or Cloddy, the name of a species of wild yam, with which they are said to abound.

Success Gally got a-ground, and had 35 fathoms close to. When on the edge of the shoal in 24 fathoms, the observed lat. was 1° 3½′ N., the Sugar Loaf bearing N. by E. ½ E. Pulo Illy (supposed) E. ¼ S., Pulo Nyas from W. ¼ N. to W. ½ S. distant 6 or 7 leagues.

NATAL BAY, having in it many dangerous shoals, the outermost of which extend nearly 2 leagues off shore into 17 or 18 fathoms water, great care is requisite in sailing to, or from the anchorage; for many ships have struck on the shoals, and it is difficult to give explicit directions that may be trusted to, for guiding a ship clear of *all* the shoals. Shoals of Natal Bay.

The Royal Bishop's Shoal, on which the ship of that name struck, is small, with only 14 feet on the shoalest part, and lies in 17 fathoms. Cara-cara Point bears from it N. E. ¼ N., Natal Flagstaff E. ¼ S., and Pulo Tamong S. S. E. ½ E. From another shoal, having 13 or 14 feet coral on it, Cara-cara Point bears N. ¾ E., Natal Flagstaff E. by N. ¼ N., and Pulo Tamong S. by E. ½ E. The Shaftsbury Reef, on which the ship of that name was lost, is situated farther in, on the East side of the channel, and Natal Flagstaff bears from the West end of it E. by N. ¼ N. Cara-cara Shoal, on the West side of the channel, bears from Shaftsbury Reef N. by W. near 3 miles, being situated about 1¼ mile S. E. ½ S. from Cara-cara, the small island near the shore to the eastward of Cara cara Point. There are other shoals whose positions are not correctly known; ships, therefore, should keep a boat a-head sounding, when bound into the bay.

Ships coming from the northward and bound to the Road of Natal, after Cara-cara Point is brought to bear about E. S. E., in 19 or 20 fathoms, may steer to round it at 3 or 4 miles distance, by keeping Natal Flagstaff about E. by S., which will carry them nearly mid-channel between the Shaftsbury and Cara-cara Shoals. When Pulo Cara-cara bears N. E. by N. they will be clear of the shoal that projects from it, (betwixt which and the island there is a small channel) and may continue to steer directly toward Natal Hill until near the road, then edge a little to the southward, and anchor with the Flagstaff East or E. by N. Ships coming from the southward may pass either inside or outside of the Royal Bishop's Shoal; if they keep in 14 or 15 fathoms, soft ground, they will pass inside of it, or by keeping in 19 fathoms it will be passed on the outside; after bringing Natal Hill or Flagstaff about E. by S., (but never to the southward of E. S. E. when in 14 fathoms) they may steer in for the road as directed above. The common anchorage is from 5 to 6 fathoms, with the Flagstaff East to E. by N. ¼ N., and nearly in a direct line between Cara-cara Point and Racatt Point, which bear about N. N. W. and opposite from each other, the latter forming the East side of the anchorage; and in this station, the distance from Racatt Point will be 1½ or 2 miles, and from Natal 2½ or 3 miles. To sail into it. Anchorage.

Natal is an English settlement, in about lat. 0° 30′ N.* and about lon. 98° 40′ E. Camphor, benzoin, and gold-dust, are the principal articles of export, and the imports, opium, iron in flat bars, salt, piece-goods of various kinds, stick-lack, gun-powder, &c. But the road is 1 of the worst on the coast, being much exposed to N. W. and westerly winds. Geo. site.

PULO TAMONG, about 3½ leagues to the southward of Natal Road near the coast, has good anchorage in 8 or 9 fathoms, between it and the main. Small vessels bound from Natal Road to the anchorage at Pulo Tamong, sometimes pass inside of the shoals, keeping near Point Racatt, and Durian Point, a little to the southward of the road; taking care not to deepen above 6 fathoms till past the latter point, on account of 2 shoals that lie out in 7 and 8 fathoms. It is best in a large ship, to steer out to the westward through the proper channel into 14 fathoms, and preserve this depth until Pulo Tamong is brought to bear E. S. E. or E. by S., she may then steer for the North part of that island, and after rounding it at a moderate distance, anchor with the body of it bearing about West in 6½ or 7 fathoms, distant ¼ mile from the shore. The well, containing good water, is then abreast, on Pulo Tamong, and to sail into the Road.

* Capt. Bennet, and some other navigators, place it in lat. 0° 32′ N.

the low land near a small white sandy beach; here, fire-wood may also be got, and a ship is sheltered from westerly winds. In sailing into, or out of this place, it is prudent to keep a boat sounding a-head on the edge of the reef that stretches out 2 or 2½ cables lengths from the island in some parts, with 6 fathoms close to it. There is a safe passage betwixt the South end of the island and the main.

Small ships coming from the southward intending to enter Natal Road by the inner passage, may pass mid-channel between Pulo Tamong and the main, in 6 to 8 fathoms. When through, the course is N. by W. and N. ¼ W. for Durian Point, observing not to come under 9 fathoms, in passing about mid-way between it and Pulo Tamong, on account of a shoal of coral rock with 10 and 11 feet water on it, which lies in 7 or 8 fathoms. When near Durian Point, borrow into 5 or 5½ fathoms; and in steering the same course toward the road, do not exceed 6 fathoms at the utmost, in passing it and Racatt Point, on account of the shoals that lie off these points, in 6½ to 8 fathoms. The Snow Marlbro' in 1791, struck, and beat off her rudder on 1 of these shoals, with Racatt Point E. ½ S., Durian Point S. E. easterly, Cara-cara Hill North, Natal Hill N. E. by E., outer extreme of Pulo Tamong S. ½ E., and another shoal with breakers S. W. by W. After getting off, she anchored in 7 fathoms soft ground betwixt these shoals, about 2 miles distant from Racatt Point.

Ayer Bongy Bay, adjacent islands and shoals;

AYER BONGY BAY, situated about 4 or 5 leagues to the S. Eastward of Pulo Tamong, has several islands and shoals fronting it; ships which do not intend to touch at Ayer Bongy, should keep well out in 26 to 30 fathoms after passing Pulo Tamong, or nearer to the islets and shoals off the East end of Pulo Batoa, than to the main, to avoid a shoal or bank, with irregular soundings from 15 to 4 fathoms coral on it, or probably less, and 20 fathoms close to. It is extensive, and situated about 3 leagues S. W. by S. from Pulo Tamong, nearly mid-way betwixt the main of Sumatra and the small islands adjoining to the S. E. end of Pulo Batoa, the latter being a large island in the offing. There are 3 small islands off the S. E. end of Pulo Batoa, and a dangerous shoal with some of the rocks above water, about 4 miles distant from the islands; when the rocks are on with the centre of the islands they bear S. S. W., and about a league inside of them there is 24 fathoms hard ground.

To sail toward that Bay.

If a ship is bound to Ayer Bongy, she may from the anchorage under Pulo Tamong, steer about S. S. W. between the main and the island in 5 and 6 fathoms soft ground, keeping rather nearest to the latter; from this island to Oojong Lalloo, the West point of Ayer Bongy Bay, she ought to pass inside of the shoal mentioned above, by steering along the coast in 9 or 10 fathoms, which will be about 1½ or 2 miles off shore. By keeping in these depths, the shoal to the S. W. of Pulo Tamong will be avoided, and the shore, which in this space contains some bays or concavitives, is safe to approach to 5½ or 6 fathoms.

The sea breaks on some of the shoals off Ayer Bongy Bay, when there is much swell, and and between most of them there are safe channels, but the shoals are not always discernible when the sea is smooth. About 4 miles off Oojong Lalloo, with Pulo Pancal E. S. E. ½ S., there is a dangerous shoal having only 9 feet on the shoalest part, and 14 to 17 fathoms near it on the outside. The Prince Henry struck, and beat off her rudder on this shoal in the night, when running for Ayer Bongy, after having anchored in the evening in 17 fathoms hard ground, and parted from 2 anchors, by the rocks cutting the cables in blowing weather. Great care is requisite in passing Oojong Lalloo, for several shoals front this part of the coast, the situations of which are imperfectly known. The ship Sylph beat off her rudder upon 1 of them in 1796, with the outer extreme of Pulo Tamong bearing N. N. W., and the point with a small island near it, commonly called Oojong Lalloo, N. by W. westerly, 2 or 3 miles distant. Most of these shoals are from 2 to 4 miles off Oojong Lalloo, and bear between S. by E. and S. S. E. from Pulo Tamong. There is a passage inside of all of them, by keeping within 1½ or 2 miles of the main, in from 4 to 6 fathoms soft ground,

when passing Oojong Lalloo and the 2 next points to the S. Eastward; and then proceeding between Pulo Panjang and the main, to the anchorage under that island. This passage seems improper for large ships; and vessels of every description, by whatever channel they enter Ayer Bongy Bay, must keep a good look out for the numerous shoals. Pulo Panjang in lat. 0° 13′ N., is the largest island in the bay.

The small Island Pulo Tanca, lies near Oojong Lalloo, betwixt which and Pulo Panca, or Pancal, situated about a league southward from the former, the passage is safe, and the depths 10 or 11 fathoms soft bottom; the passage into the bay is also safe to the eastward of Pulo Pancal, between it and Pulo Tellore, situated at the S. E. part of the bay; and there is also a channel with 6 and 7 fathoms water in it, betwixt that island and Oojong Seecarboa, the S. Eastern extremity of the bay. A ship having entered the bay by the most convenient passage, may steer for Ayer Bongy Flagstaff, situated on a bluff point or hill at the S. E. part of the bay, close to the North end of which, is the river and landing place. The common anchorage is abreast of the river bearing E. by N. ½ N. distant about a league, in 4½ or 5 fathoms good ground. There is also anchorage under Pulo Panjang, the largest island in the bay, bearing about W. by S. from Ayer Bongy River, having a reef with breakers to the northward of it about a mile. Betwixt this island and Pulo Jambo or Sambo, a small island to the westward, there is said to be a clear passage. To the northward of Pulo Tellore there is a reef with breakers, and another to the eastward near the main, which require care in passing through the channels contiguous to that island. Anchorage.

To the southward of Ayer Bongy South point, which is of bluff appearance, there are several shoals; ships bound from that anchorage to the S. Eastward, generally keep inside, near the coast, until clear of them. Two of these shoals bear S. E. ¾ E. from Pulo Tellore,* and lie close together; from a small hill to the southward of Oojong Seecarboa, (called also Oojong Gading) they bear S. S. W., and are distant from the point about 4 miles. There is a channel between these and another small shoal bearing S. S. E. 1 mile from them, having in it 14 and 16 fathoms. H. M. S. Drake, on the 1st of September, 1809, struck on a small coral shoal, with the peak of Mount Ophir E. by N., Pulo Tellore North, Lalloo Point N. W., off shore 3 leagues, having close to it 23 fathoms soft mud. Shoals to the southward of it.

MOUNT OPHIR, in about lat. 0° 4′ N. situated about 8 leagues inland, to the eastward of Oojong Seecarboa, appears like an obtuse cone by itself, separated from the chain of other mountains, and may be seen 110 miles in clear weather, it being the highest mountain on Sumatra visible from the sea. A Volcano Mountain to the southward, about 9 or 10 leagues inland, is somewhat less elevated. Mount Ophir.

To the southward of Ayer Bongy Shoals, there appear to be other shoals in the offing abreast of Passamane Bay, 1 of which about 2 cables lengths in diameter, is thought to have 3 fathoms on the shoalest part, with 21 and 22 fathoms close to it all round; the Prince Henry got on it and saw the rocks along side, with Oojong Seecarboa bearing N. by W. ½ W., the largest of Oojong Massang Hills E. by S., and a small hummock East, taken for the true point, the trees on the low land just visible from the deck, distant about 5 leagues. This shoal consisting of black coral, is not easily discerned. Shoals in the offing.

In the Luconia, high breakers were seen on another shoal, bearing about S. W. by W. from Oojong Massang, which was thought to be about 6 leagues off shore, but Captain Bennet thinks it lies 8 or 9 leagues from the shore. With the largest of the Massang Hills E. by N., there is said to be a shoal with breakers about 5 miles off shore, in 15 or 16 fathoms water.

OOJONG MASSANG, (or Point Massang,) situated in lat. 0° 17′ S. nearly, and about 10 leagues S. E. by E. from Ayer Bongy Bay, has a reef of foul ground stretching out about Oojong Massang and hills.

* These shoals are said by another navigator, to bear S. E. by S. from Pulo Tellore in a line; the southernmost, distant from it about 4 miles. There are others about 6 miles to the S. Eastward of that island.

2 or 2½ miles, which should not be approached under 17 fathoms; and near the point, are the 3 Massang Hills, the middle or largest having a tabular form, and the others resemble hay-cocks. Between this place and the South point of Ayer Bongy Bay, which is of middling height, the coast is low, and forms the Bay of Passamane.

To pass inside the shoals;

If a ship departing from Ayer Bongy Road, intend to proceed to the southward inside of the shoals, where the lead is a good guide and the anchorage safe, she ought to keep in from 5 to 8 fathoms within 2 miles of the shore until abreast of Oojong Seecarboa, and pass this point about 1 mile distant; she may then in day-light, borrow toward the shoals to 12 fathoms, but not under 9 fathoms toward the main, after the point bears about N. N. E., when turning to windward. When 3 leagues to the S. E. of Pulo Tellore, she may stand out to 15 or 16 fathoms, and keep in these depths, or steer a course for Oojong Massang, without hauling into Passamane Bay under 12 fathoms, or approaching too near the shoals in the offing, observing not to come under 17 fathoms in passing Oojong Massang.

and outside of them.

To pass outside of the dangers, after being clear of the shoal 3 leagues S. W. by S. from Pulo Tamong, a ship ought to keep well out in 25 or 26 fathoms, gradually rounding the shoals off Ayer Bongy; having cleared these, she should haul to the eastward to make Oojong Massang Hills, and round that point at 3 miles distance in 17 or 18 fathoms, then keep in 17 to 20 fathoms for the outer Ticoo Island, observing to round it on the West side within a mile, in 16 or 17 fathoms. A ship departing from Ayer Bongy Bay, should, if this passage be adopted, sail out between Pulo Pancal and Pulo Tellore, then steer S. by E. and S. S. E. until in 24 or 25 fathoms, and not come under 20 fathoms until near Oojong Massang; a good look out is necessary, for the 3 fathoms shoal of the Prince Henry, mentioned above.

Ticoo Islands, channels and dangers near them.

TICOO ISLANDS, about 3 leagues to the S. E. of Oojong Massang, are 3 in number, small and woody, about 1½ mile apart, and the innermost is the same distance from the main. The proper channel is within a mile of the West and South sides of the outer island, in 15 to 17 fathoms, to avoid a shoal bearing from it about S. W. by W. 4 miles in 25 fathoms, over which the swell may be seen to roll when it is abreast, if there is much sea: another shoal lies S. W. about 5 leagues from the outer Ticoo Island, no ground 50 fathoms near it. Should night be approaching, a ship may anchor in 9 or 10 fathoms, with the outermost island bearing West, distant about ½ a mile. This island is in lat. 0° 23′ S., and bears S. E. ½ S. from Oojong Seecarboa.

In coming near to these islands from the southward, breakers appear, which seem to deny any safe passage among them; but betwixt the inner and middle islands, there is a safe channel on either side of a small coral bank about a cable's length in diameter, situated about ¼ of a mile from the innermost, and about a ¼ of a mile from the middle island. It is steep to, all round, with 7, 8, and 9 fathoms betwixt it and the middle island, but the passage on this side is very much contracted by a spit projecting near 2 cables lengths from the N. E. end of the island. This passage between it and the inner island has good room for anchoring occasionally, with soundings 6½ and 7 fathoms near the small bank, to 6 and 5 fathoms close to the island, over a soft bottom. From the South end of the inner island a shoal stretches out near a ¼ mile, with 5½ fathoms soft ground close to, which must be avoided by a ship that adopts the inner channel, just described. To the southward of the middle island, distant about ½ a mile, the sea breaks on some rocks, to which a proper birth must be given, in ships that run under these islands for shelter from N. W. winds.

Dangers from thence southwards.

To the southward of the Ticoo Islands there are several shoals, and a great many others well out in the offing, lie scattered from hence to the southward of Priaman, which may be considered the most dangerous part of the coast.

Pulo Cassey, the passage and shoals, with directions.

PULO CASSEY, or Cassiqua, in about lat. 0° 36′ S., bearing about S. E. 6 or 7 leagues from the Ticoo Islands, is covered with trees, very small, with a sandy beach, and distant

about a league from the main. The passage in this track, inside of the principal shoals, is generally considered the best, by keeping in from 16 to 12 or 10 fathoms, and the coast is safe to approach to 6 or 7 fathoms in many places. Some navigators state, that there are no shoals under 16 fathoms on this part of the coast; others assert that some shoals are situated near it in 5 or 6 fathoms. The best guide, therefore, is, after leaving the Ticoo Islands, to keep in soft ground from 16 to 10 or 11 fathoms, for the bottom is all soft, except when near a shoal.

The coast from the Ticoo Islands to Pulo Cassey is a little hilly, and lies about S. E. by E. A shoal flat projects out nearly 2 miles in some places, on which the depths decrease regularly to 5 fathoms about 2 miles off shore. Exclusive of the shoal to the S. Westward of the outer Ticoo Island, already mentioned, the others bounding the passage on the West side, are 1 bearing about S. S. E. from the outer Ticoo Island, and nearly N. W. by W. from Pulo Cassey; when the breakers on it bore from West to N. W., distant about 2 miles, the depth was 16 fathoms; another, on which the sea sometimes breaks, bearing about S. E. by S. from the outer Ticoo Island, and nearly N. W. by W. from Pulo Cassey, with 20 fathoms close to it on the East side; and there is 1 with 3 fathoms on it, bearing S. S. E. southerly from the outer Ticoo Island, and N. W. $\frac{3}{4}$ W. from the northernmost of the 3 Priaman Islands, being that nearest to Pulo Cassey. Betwixt some of these shoals, there are safe channels; the Duke had no ground 35 fathoms in passing between 2 of them, about 5 leagues S. S. E. from the Ticoo Islands.

Priaman islands, the channels, and adjacent shoals.

PRIAMAN ISLANDS, 3 in number, situated abreast of the settlement of the same name on the main, about a league distant, afford shelter from N. W. or Westerly winds, and the northernmost has on it a well of fresh water, where ships are supplied. From this, the middle island is distant about $1\frac{1}{2}$ mile to the S. S. W., with 7 fathoms water in the channel between them; but a reef of breakers projects about 2 cables lengths from the West part of the northern island, with 7 fathoms close to it. The channel inside of the northernmost island having only $3\frac{1}{2}$ fathoms near the island, and decreasing gradually toward the main, is only fit for small ships. From the middle island, the southernmost 1 is distant 2 miles to the S. S. Eastward; and each of them is about $\frac{1}{2}$ a mile in extent. There are several shoals about 2 or 3 miles to the westward of these islands, on which the sea breaks in bad weather, having 14 or 15 fathoms near them; but betwixt them and the islands the passage is safe, by keeping near the latter, in from 10, to 6 or 7 fathoms. The northernmost of this chain or group of shoals, bears West from Pulo Cassey 2 or 3 miles, with a safe channel betwixt it and that island, in soundings 12 or 14 fathoms. On the East side of Pulo Cassey there is also a safe channel, with 6 fathoms near the island, decreasing regularly from 5 fathoms about $\frac{1}{2}$ a mile from it, to 3 and 2 fathoms about $\frac{1}{2}$ a mile from the main. To the N. N. E. of this island, more than half way to the main, there is said to be some rocks, with 4 fathoms on the outside of them.

Priaman river.

PRIAMAN FLAGSTAFF, in about lat. 0° 40′ S. bears nearly S. E. $\frac{1}{2}$ E., 8 miles from Pulo Cassey; the river is small, and the entrance so shoal, that a pinnace cannot go in until near high water, and even then not without danger. A little way out from the mouth of the river there is a bank, having on its North and South ends 2 patches of sand above water; within it, there is 2 fathoms sandy bottom.

To sail from the Ticoo Islands, to Priaman and Padang by the Inner Passage.

If it is intended to proceed by the inner passage from the Ticoo Islands to Priaman or Padang, a ship after having steered along the coast in from 16 to 8 or 10 fathoms, may when Pulo Cassey is approached, pass on either side of it at a small distance, as the wind will best permit, then steer through betwixt the middle and northernmost Priaman Islands, and anchor inside, under the shelter of them. If bound to Padang, she may continue to keep near to the East sides of the middle and southernmost islands in passing them, and

steer along the coast at a moderate distance until Pulo Ayer is approached, there being no danger in this part. There is a passage inside of that island, but it is advisable to pass about 2 or 3 miles distance on the outside, to avoid a shoal said to lie S. S. W. from it; when clear of this shoal, a direct course may be steered for Padang Flagstaff, or for the anchorage under Pulo Pisang, should unfavorable weather be apprehended, where ships are sheltered from N. W. and Westerly winds, this being the proper road.

Pulo Ayer, or Sow Island, (called also Pulo Carong,) distant about 1½ mile from the shore, and 3 leagues to the N. W. of Padang Head, is small, with a reef projecting from its South end about a ¼ mile: a shoal is thought to lie S. E. from it, and another to S. S. Westward, stretching out a great way.

Padang Islands.

PADANG ISLANDS, are situated well out in the offing, 7 in number, having several dangers amongst them. They are named numerally, Pulo Sato or 1st, Pulo Dua 2d, Pulo Teega 3d, Pulo Ampat 4th, Pulo Leema 5th, Pulo Annam 6th, and Puloo Toojoo the 7th.

Pula Sato is small, high, and flat, and the easternmost of these islands; it is distant about 2½ leagues to the W. N. W. of Pulo Pisang, and has a reef off its N. E. point about a mile, or an island just forming, called Pulo Passier.

Pulo Dua is a little larger than Sato, and lies to the S. W., having a safe passage between them.

Pulo Teega, about 4 miles to the southward of Dua, and 3 leagues to the W. S. W. of Pisang, is the largest of these islands; breakers and foul ground stretch from it a great way to the N. Eastward, nearly shutting up the passage betwixt it and Pulo Dua, which is thought to be dangerous.

Pulo Ampat, about the size of Dua, lies to the westward, bearing from Pulo Leema S. W. ½ S.

Pulo Leema, bearing about N. W. from Pulo Pisang and Pulo Sato, is small, and 1 of the innermost islands; a reef is said to project from it about 2 miles to the S. W., and another to lie 2 or 3 miles to the N. E.; a navigator says, E. S. E. 2 miles from it; but on the North side it is clear, and there is thought to be a safe passage betwixt it and Sato.

Pulo Annam, bearing from Pulo Leema W. ½ S., is of considerable size, and appears the last island in coming from the southward, as Toojoo is not then in sight; to the northward, and also betwixt it and Ampat, there is said to be shoals.

Pulo Toojoo, the northernmost of these islands, is nearly of the size of the former, and bears S. S. W. ½ W. from Pulo Cassey, to the northward of the Priamans. A coral bank, bearing N. W. by W. about 3 leagues from it, should be approached with caution; for it is steep from no ground to 10, 7 and 5 fathoms, and there may be less water on it. Close to, and amongst all these islands, the water is deep, and there is no good anchorage.

Geo. site of Padang Head, the river and adjacent coast.

PADANG HEAD, in lat. 0° 56′ S., about lon. 99° 58′ E., having on it the Flagstaff, is a high bluff head-land, with a rock close to it called the Whale, and forms the S. W. side of the river's entrance; about a mile up on the North bank, the fort and town are situated, but there are also houses and gardens on the opposite side. Bullocks, poultry, various fruits, and vegetables, may be got here at moderate prices; and excellent water issuing from the rocks on the South side of the river, which is conveyed in spouts to the boats.

The river is only navigable by boats or small vessels in fine weather, the depths at low water being 8 and 9 feet at the entrance, and from 9 to 14 feet a little way inside, and the rise of tide is about 2½ feet on the springs. It is very dangerous to enter the river when the wind blows strong at West or N. W., for the sea then breaks entirely across the entrance, and a continued breaker extends from Padang Head to the S. W. point of the shoal that stretches nearly from it to within ½ a mile of the North end of Pulo Pisang. This place is in possession of the English, from which gold-dust, benzoin, and other articles are exported, in exchange for opium, blue and white cloth, and other piece-goods.

In approaching it from the offing, the head will easily be known by its bluff aspect, and the coast from it southward, being all bold high land; whereas, the land near the sea to the northward of the river is low, and all the coast is low from thence to Priaman, but far in the country the land is generally high.

Anchorage. A ship arriving when the weather is favorable, and intending to remain very little time, may anchor in 12 or 13 fathoms soft ground, with the flagstaff bearing E. ½ N. or East, distant from the bluff head-land 1¼ or 1½ mile. If the weather is threatening, or the stay to be 3 or 4 days, it will be prudent to proceed to the proper road, under Pulo Pisang.

Pulo Pisang. PULO PISANG, about 2 miles S. by W. from Padang Head, is a small island about ½ a mile in diameter, where water may be got by digging wells 4 or 5 feet deep, at the foot of the hills; which although soft and pleasant to taste, is said to be impregnated with salt petre, and not very wholesome: the firewood is also indifferent. The rocky coral bank stretching about 40 yards from the shore of this island, is steep to, all round, and at the N. E. part there is a wharf for the convenience of landing; for ships trading to Padang, moor close to the East and S. E. sides of the island, sheltered from N. W. and Westerly winds. When these winds prevail, boats cannot pass between Padang River and the ships under Pulo Pisang, on account of the breakers stretching across the passage.

the channels. All round Pulo Pisang there is a safe passage of 6 and 7 fathoms, but it is narrow in some places, particularly betwixt the North end of the island and the extensive shoal bank that occupies most of the space between it and Padang Head, on the shoalest part of which are only 2¼ and 2½ fathoms hard sand; this passage is not above ⅓ of a mile wide, and is seldom used by large ships. The deepest water is close, or near to Pulo Pisang; a ship to enter by the North channel, must bring the island well to the eastward, and round the North end in 7 or 8 fathoms about the distance of a cable's length, or little more: the water will shoal as she runs in, to 6 and 5 fathoms, which is the least near the island; but toward the main, and Pulo Pisang Kecheel (or Little Pulo P isang) lying near it to the eastward, the depths decrease to 4 and 3 fathoms hard sand. Having rounded the island close, and brought the wharf to bear W. by N or W. N. W., she may moor in 5½ or 6 fathoms, about 2 cables lengths from the island. Large ships should always use the other channel in proceeding to the anchorage under Pulo P isang, by steering direct for the West side of the island, and rounding it on the South side about a ¼ of a mile distant; after bringing the body of the island to bear about N. W. by W., they may anchor and moor in 5 or 5½ fathoms mud, about 2 cables lengths from it, where they will be well sheltered from westerly winds.

To sail to the anchorage.

To sail from Ticoo Islands, outside the other islands to Pulo Pisang. DEPARTING from the TICOO ISLANDS for Padang, if not intending to touch at Priaman, ships frequently pass outside of the Priaman Islands and shoals, which is by some persons thought the best route. If it is adopted, keep in from 16 to 12 fathoms until within 5 or 6 miles of Pulo Cassey, then steer out betwixt the shoals which lie to the westward of that island and those to the southward of the Ticoo Islands, until in 35 or 40 fathoms, and from hence steer to the southward for Pulo Toojoo; after passing near it on the East side, steer to pass Pulo Leema and Pulo Sato, also on the same sides, and from thence to the anchorage under Pulo Pisang. If the wind is contrary, you ought not in working inside of these islands, to borrow toward the main in the bight to the southward of Pulo Ayer, where there is said to be a shoal; nor too near the other shoal, to the S. S. Westward of that island.

And from Oojong Lalloo to it; OUTER PASSAGE, from Oojong Lalloo (the West point of Ayer Bongy Bay) to Padang, seems preferable to any other with a fair wind, but as the current near this coast generally runs with it, this passage is not to be recommended in contrary winds, particularly when bound to the northward, for it is destitute of anchorage. If you adopt this route, at passing Pulo Tamong, keep well over toward the islets off the S. E. end of Pulo Batoa, to

avoid the bank nearly midway betwixt them and the main: having brought them to bear about N. W., steer to fall in with Pulo Toojoo. You may pass to the eastward of it, Pulo Leema, and Pulo Sato, then steer for the anchorage under Pulo Pisang, as directed above; or if it seem preferable with the prevailing wind, you may steer to the southward, outside of Pulo Toojoo, Pulo Annam, and Pulo Ampat, then to the eastward betwixt Pulo Dua and Pulo Sato, keeping near to the latter in passing, to avoid the 2 fathoms shoal, that lies about 4 miles S. by E. ½ E. from it, and from the South point of Pulo Pisang W. by S. southerly 2 leagues. From Pulo Sato, steer direct for the anchorage under Pulo Pisang. It would be imprudent to attempt to pass betwixt Pulo Dua and Pulo Teega, for the rocks stretching across, seem to deny any safe passage that way.

or to Moco Moco.

If bound to Moco Moco, and not to touch at Padang, you should continue to keep outside of all the inner islands adjoining to the coast, between which and the chain of large islands in the offing, there is a safe channel from 10 to 12 leagues wide; but a small dry sand, about 3 or 4 leagues N. W. from Pulo Musquito, and nearly the same distance from Pulo Toojoo, must be avoided. It will be proper to keep nearest to the inner islands, and make Indrapour Point, to prevent being driven to leeward when northerly winds prevail.

To sail from Padang to the northward.

TO SAIL from PULO PISANG to the NORTHWARD by the MIDDLE PASSAGE, the course is N. W. by N., to pass between Pulo Leema and Pulo Ayer about mid-channel, in soundings 22 to 26 fathoms; by which, the shoal projecting E. S. E. 2 miles from Pulo Leema, and the coral patches near Pulo Ayer, will be avoided. Having passed these islands, there is no more danger till the Priaman Islands are approached, and the coast may be borrowed on to 10 or 12 fathoms, when it is necessary to anchor.

On drawing near to the Priaman Islands, it is requisite to haul out for Pulo Toojoo, to avoid a large shoal bearing W. S. W. 2 miles from the outer Priaman Island. When well over toward Pulo Toojoo, a N. W. ½ W. or N. W. by W. course should be steered, to avoid the shoal bearing W. N. W. from that island, and others lying in 30 and 35 fathoms, toward the shore. When 5 leagues to the N. W. of Pulo Toojoo, it is requisite to haul in again toward the main, to make the outer Ticoo Island, for a shoal bears S. W. from it about 5 leagues, having no ground near it with 50 fathoms line; and another shoal bears W. S. W. from it about 3 miles.* Being clear of these, a course about N. W. by W. should be steered to pass between the small islands off the S. E. end of Pulo Batoa and Oojong Lalloo, taking care to keep between 25 and 30 fathoms, for in 20 and 22 fathoms, lie several shoals; and in 34 fathoms, a very large and dangerous one. The soundings, therefore, must be the principal guide, in this run of about 15 leagues; which may be pursued night or day, with proper attention to the lead, and preserving the depths mentioned.

When Pulo Batoa is seen bearing about N. W. by W. or W. N. W., it is proper to steer well over for the islands off its S. E. end, the depths will be from 16 to 20 fathoms, and when within 4 or 5 miles of them, a course about N. W. by N. should be steered until past the shoals off Natal; for it would be imprudent to come under 22 fathoms between Pulo Batoa and the Sugar Loaf, at the South entrance of Tappanooly Bay. If not bound into that port, Mensular may be passed on the outside at a small distance, to avoid the shoals in the offing. There is no danger in the channel inside of that island, except a shoal in 9 or 10 fathoms near the main, about ⅓ of the distance from Battoo Barroo Point, toward Pulo Sokum. From Mensular, the best course is about W. N. W., preserving soundings of 26 to 27 fathoms, by which the Triangle Shoals, and several others in shore, will be avoided. When the depths increase to 28 or 29 fathoms, a N. W. course will be proper, not coming under 22 or 23 fathoms: Pulo Lacotta will be seen, and the small sand bank bearing N. ½

* Another account places it S. W. by W. 4 miles, and Capt. Bennet says it lies S. W. 4 miles from the Ticoo Islands.

W. from it, called Bird Island, is said to lie in 31 fathoms, having a reef extending to the N. W. 1½ or 2 miles. Sinkel point, forming a bluff, covered with trees, will be next discerned, which may be passed about the distance of 4 miles, the depths then decreasing to 18 or 19 fathoms. Passage Island will soon be seen to the N. westward, and the greatest caution is requisite in this part, particularly if the wind is contrary; sailing toward the island, it should be kept between N. N. W. and N. W. by N., in soundings 16 to 14 fathoms, for about ½ way betwixt it and the main, the middle bank extends nearly N. W. and S. E., having great overfalls upon it, in some places only 2½ fathoms rocks. With a leading wind, Passage Island N. W. by N. is the best bearing until within about ½ a mile of it, and then it may be rounded about this distance on the East side. Being through this intricate passage, a course about N. W. should be steered, then toward any of the northern ports, as circumstances require; but great care is requisite in passing between lat. 3° to 4° N., for there are many shoals interspersed along the coast adjacent to Soosoo Bay, and to the southward of it; and some others lie 9 or 10 miles off shore, with no ground 50 and 60 fathoms close to them on the outside. These outer shoals seem to lie on the edge of the bank of soundings, 1 of them is in lat. 3° 04′, and another in 3° 30′ N., already mentioned in the preceding section.

## 4th. COAST, ISLANDS, AND SHOALS, FROM PADANG TO FORT MARLBOROUGH, WITH SAILING DIRECTIONS.

Coast from Padang southward.

FROM PADANG, to the distance of 8 or 9 leagues southward, the coast is intersected by numerous bays and inlets, several of which being protected from the sea by the islands contiguous to them, form excellent harbours. The land near the sea is generally of moderate height, and farther in the country, it is more elevated.

Boongas Bay, contiguous isles and dangers.

BOONGAS BAY, about 5 or 6 miles to the S. E. of Pulo Pisang is a safe harbour, with 14 or 15 fathoms in the entrance, and from 10 to 6 fathoms inside; but there being a shoal nearly in the middle of the bay, about a large ¼ mile to the eastward of the small island Pulo Cassee, it is proper for a ship going in, to keep near the North point, and anchor between that side and the island, where she will be well sheltered. There is a shoal to the N. N. E. of Pulo Cassee, near the North side of the bay; but a ship may, by keeping near the island, pass in safety between it and either of those shoals, and anchor to the eastward of it, if she is to go so far inside. At the S. E. angle of the bay there is a harbour or cove with 12 to 6 fathoms in it, secured from all winds, having shoal water projecting from the point and island that forms the N. E. side of its entrance. There are villages all round this bay, and from thence to Padang. About W. by N. 1¾ mile from the North point of the bay lies a dangerous rock, with 15 and 16 fathoms close to it, between which and Pulo Teloor a small island about a mile to the N. E. there is a safe passage; but it is best to pass outside of the rock in 17 or 18 fathoms, and after bringing the entrance of Boongas Bay to bear East, or the middle of a small hill at the bottom of it, on with a high hill inland, a ship is clear to the southward of the rock, and may steer direct for the bay; and when in the entrance, she must borrow toward the northern side, to avoid the shoal a little inside, already mentioned.

There is a point of land about 2 miles to the E. S. E. of Pulo Pisang, that forms the North extreme of Brandy Wine Bay, opposite to Pulo Teloor; when that point is in one with a small hill near it, bearing N. by E. easterly, the same transit line passes over the rock mentioned above, and touches the West part of Pulo Seronda, or Bobeck, then on the opposite bearing.

Pulo Senaro and surrounding dangers.

PULO SENARO, or LACRONE, bears S. S. W. westerly from Pulo Pisang, distant about 6 miles, from which a reef always visible, bears S. W. by W. westerly about a league, being nearly midway between it and the 2 fathoms shoal, mentioned to the southward of Pulo Sato in the preceding section. The water is deep from 35 to 40 fathoms around these shoals, and between them and the adjoining islands; if therefore the shoals are seen, or their positions known, a ship may pass between them with safety.

From Pulo Senaro about a large mile to the N. E, there is another shoal having on it 3 fathoms, and about 2 miles S. E. by S. from the same island, there is a shoal nearly midway betwixt it and Pulo Seronda; another shoal is said to lie about a league nearly S. by W. from the former island.

To sail from Pulo Pisang to seaward;

Being bound from Pulo Pisang to the southward, and wishing to run out speedily clear of the islands into the open sea, a ship may steer to the S. W. to pass close on the N. W. side of Pulo Senaro, betwixt it and the reef that is always visible, observing, when the island is approached within 2 miles on the N. E. side, to give a birth to the 3 fathoms shoal, by edging a little to the westward and avoiding a direct line that passes through Pulo Pisang and Padang Head, which also passes through the shoal. To pass out to the southward of Pulo Senaro, when distant 2 miles it should be brought to bear S. W. by W. or W. S. W., a direct course (about S. W.) may then be steered to pass close to its South point, and the same course continued about 2 or 3 miles beyond it, will carry a ship clear of the 2 shoals mentioned to the S. E. and southward.

The Snow Marlbro' struck on a shoal, with only from 6 to 9 feet water over the coral rock, Pulo Pisang bearing N. N. W., Pulo Senaro S. W. $\frac{1}{2}$ W., distance off the main 3 miles. The same vessel saw a sandy patch above water, surrounded by a large coral reef, bearing in one with Pulo Senaro S. E. $\frac{1}{2}$ E., distant from that island 4 or 5 miles, Padang Head bore at the same time N. E. by E.

The Research found only $2\frac{1}{4}$ fathoms on a shoal, with Pulo Senaro bearing North, and Pulo Pergany E. S. E. This vessel had $\frac{1}{4}$ less 4 fathoms on another shoal, with Pulo Senaro bearing N. W. distant $2\frac{1}{2}$ miles, and Pulo Seronda S. E. $\frac{1}{2}$ S. Pulo Pergany bearing East 4 or 5 miles, saw breakers on a shoal in one with Padang Head N. by E. Had 5 fathoms rocks on another shoal, with Pulo Niamo bearing N. W., Pulo Ayer Besar E. by S. and Pulo Baby Besar about E. N. E.

or from it to the southward.

THE BEST ROUTE from Pulo Pisang when bound southward, is to steer for Pulo Seronda (or Bobeck,) bearing from it nearly South, distant 8 miles, taking care with a working wind to keep Pulo Pisang to the northward of N. N. W. in standing toward the rock off Boongas Bay: when near Pulo Seronda she may steer about S. S. W. along the West sides of it, Pulo Bintango, and Pulo Marra, the next islands to the southward, and on either side of Pulo Niamo, or Musquito, a small island in the offing, distant about 3 leagues S. by W. $\frac{3}{4}$ W. from Pulo Seronda. There is also a narrow, but bold and safe passage inside of these islands, which having soundings from 20 to 36 fathoms, is generally adopted as the best; the only known danger in it is a shoal near $\frac{1}{2}$ a mile E. N. Eastward from Pulo Oolar, a small island about mid-channel between Bintango and Marra. Betwixt the shoal and a spit projecting from the North point of Pulo Oolar, there is a safe passage, and it lies rather nearer to the islands on the East side of the channel than to Pulo Oolar; but the channel outside of Pulo Oolar, between it Bintango and Marra, is clear of danger.

Pulo Marra, and the adjoining islands.

PULO MARRA, in about lat. 1° 12′ S., and $1\frac{1}{4}$ mile in extent, is inhabited and affords good water; there is anchorage in a small bay, formed between the N. E. point and a reef that projects from an islet to the southward. There is also anchorage under Pulo Bintango, or Pergany, the middle island on the outside of the channel; and under all those contiguous

to the main, that form the East side of the channel, there is anchorage from 10 to 20 fathoms, and shelter from N. W. or westerly winds.

Soongey Peesang Bay.

Opposite to these islands there are 3 bays or harbours on the main of Sumatra; the northernmost, Soongey Peesang Bay, bearing about E. by N. from Pulo Seronda, has 2 rocks in the entrance, with $1\frac{1}{4}$ and 2 fathoms water on them; between them and the northern shore, close to the latter, there is a narrow passage with 15 and 17 fathoms, decreasing inside to 8 and 9 fathoms: there is also a narrow passage between the islets that lie off its entrance and the southern point of the bay, but this place is not very safe for large ships.

Soongey Peenang Bay.

Soongey Peenang Bay, bearing about N. E. from Pulo Marra, is safe to enter, by steering in about mid-channel, or borrowing toward the northern side at discretion; in this bay a ship is sheltered from mostly every wind, it being only a little open to S. S. westward, and the depths are from 16 fathoms in the middle, to 7 or 8 near the shore, decreasing to 4 and 3 fathoms in the North part.

Pulo Saytan Harbour; to sail into it.

PULO SAYTAN HARBOUR, formed inside of the 2 large islands Pulo Sabadda and Pulo Troosan, is about 5 miles in extent, N. W. and S. E. and very safe, the depths in it generally from 16 to 8 or 9 fathoms, soft bottom. There are 2 passages into it, the northern 1 about $\frac{1}{3}$ of a mile wide, bearing East northerly from the North end of Pulo Marra, and close to the mouth of Soongey Peenang Bay; to enter the harbour by this passage, a ship must keep to the northward into the mouth of that bay, to avoid a 2 fathoms rocky shoal about a large $\frac{1}{2}$ mile West from the North bluff point of Pulo Sabadda, which forms the South side of the entrance. This bluff point, the rocky shoal, and North point of Pulo Marra, are on the same transit line, bearing nearly East and West of each other, a ship must therefore, keep to the northward of that line in approaching the entrance of the harbour, which is safe after having passed the shoal. The South entrance, about E. S. E. from the South end of Pulo Marra, has in it 2 islands, and an islet farther out close to Pulo Sabadda, which forms the North side, as Pulo Troosan does the opposite: the best passage is betwixt the 2 islands in the entrance, that between the southernmost and Pulo Troosan is also safe, with soundings from 10 to 20 fathoms, and they are about $\frac{1}{6}$ of a mile wide; between the northernmost island and Pulo Sabadda, there is no passage. Pulo Troosan appears as a projecting part of the main, and is separated from it by a very narrow passage, with 3 feet water in it. Pulo Saytan, in the middle of the harbour, is nearly surrounded by shoal water and islets; the N. E. arm of the harbour to the northward of that island, is full of shoals, and should be avoided. E. by N. from it, upon the main, and close to the shore, there is a watering place.

To sail from Pulo Marra southward,

DEPARTING from PULO MARRA, it is proper to steer to the S. eastward, passing near the West point of Pulo Troosan, and from thence on either side of Pulo Babee-*kecheel*, a small island about $2\frac{1}{2}$ miles to the southward of Troosan. Having passed near to this island, to avoid the shoal in the offing, a S. easterly course may be continued between Pulo Babee *besar* and Pulo Ayer, in moderate depths from 25 to 16 fathoms: from these islands, the Flagstaff of Pulo Chenco may be seen upon a round hill to the E. N. E., toward which, a ship intending to touch there ought to steer, leaving the small islands Samanky and Cassee, to the northward, and she may anchor off Pulo Chenco in 12 fathoms. There is a harbour or cove inside of the island, with 2 passages leading to it; the proper 1 on the south side of the island, has 9 and 10 fathoms water, and there is from 7 to 4 or 5 fathoms inside, in the harbour. This is a place of considerable trade, and has a wharf for the convenience of lading and unlading goods. To the northward lies Chenco Bay, containing regular soundings, and good anchorage at the N. W. part, close to Loompoor Village.

to Pulo Chenco.

Pulo Ayer Besar,

PULO AYER *BESAR*, in lat. 1° 24′ S., is the residence of a Malay Chief, and has

Neighbouring islands and channels.

on it a conspicuous round hill; on the south side of it, is Pulo Ayer *kecheel*, also inhabited, and a rocky shoal projects from it nearly to the former island. The channel inside of these islands, and to the southward of Pulo Babee *besar* and the 2 small islands to the eastward, is 3 miles wide, and very safe. There is also a safe passage contiguous to the main, inside of Pulo Babee *besar*, Samanky and Cassee, by keeping nearest to the island, in from 7 to 10 or 12 fathoms. Pulo Babee Bay, to the northward of the islands of that name, and on the East side of Pulo Troosan, has regular soundings, and is sheltered from N. W. and West winds. At Pulo Babee *besar*, wood and water, poultry and sheep, may be procured.

About a league South from Pulo Marra, and about the same distance E. N. E. from Pulo Niamo, or Muskito, a small isle in the offing, there is a rocky bank with 17 and 20 fathoms on it, and 40 fathoms a little way outside; but the only known danger near the passage be-

Coral Shoals.

tween Pulo Marra and Pulo Ayer *besar*, is a coral shoal with 2 fathoms on it, and from 27 to 33 fathoms around. From this shoal the West point of Pulo Troosan bears N. 2° E., Pulo Babee *kecheel* N. E. by N. $\frac{1}{4}$ N. about 4 miles, which is the nearest island to it, the South point of Pulo Babee *besar* N. E. by E. $\frac{1}{2}$ E., and the top of the hill on Pulo Ayer *besar* E. by S. From this island S. 3° W. distant 4 or 5 miles, lies a small dangerous shoal, over which the sea is seen to roll when there is much swell.

Several Bays.

To the eastward of the island last mentioned, there is the 2 bays of Battuwang, and Teloo Cassee, on the main, both containing good anchorage in moderate depths, but open to westerly winds. About 2 leagues farther to the S[illegible] is situated Batang Capay Bay, having also good ground for anchoring, and open to S. westerly winds. Nearly West from this bay $3\frac{1}{2}$ leagues, and $2\frac{1}{2}$ leagues to the S. S. W. of Pulo Ayer *besar*, lies Pulo Panneu, or Orange

Orange Island.

Island, which is small, with 40 and 43 fathoms close to it on the outside. Captain Kirton places a shoal 2 miles E. by N. from it, the existence of which seems doubtful.

Other islands and shoals near the coast.

The other islands from thence to Ayer Raja, that front the coast at 2 to 5 leagues distance, are Pulo Tellore in about lat. 1° 38′ S., distant $2\frac{1}{2}$ leagues to the S. E. of Orange Island, and about the same distance from Tellore bluff Point, on the opposite shore; to the northward of which, lie some rocks near the main, dry at low water; and about a league N. by W. from Pulo Tellore, there is said to be a shoal; from that island breakers also project $\frac{1}{4}$ of a mile. Pulo Ayer is about 5 miles to the S. W. of Pulo Tellore; to the N. W. of it about a league, there is said to be a shoal, and another about $1\frac{1}{2}$ mile to the southward. Sandy island bears S. E. by E., about 7 miles from Pulo Ayer, and Tree Island bears about S. S. W. $2\frac{1}{2}$ leagues from Sandy Island, having a reef of breakers to the N. westward of it about a league.

PULO BRINGEN, or RINGEN, the southernmost of this chain of islands, in about lat. 1° 58′ S., is 4 leagues from the main, and 3 or 4 miles E. by S. $\frac{1}{4}$ S. from Tree Island; there is a $2\frac{1}{2}$ fathoms shoal about $1\frac{1}{2}$ mile to the N. N. W. of it, and S. by E. from it about 5 miles there is 3 fathoms on another rocky shoal. From 1 of the reefs of breakers, Pulo Bringen is said to bear S. S. E. $\frac{3}{4}$ E., and Tree Island S. $\frac{3}{4}$ E. When in 24 fathoms about 2 leagues off shore, with the Volcano Mount E. $\frac{1}{4}$ N., and Pulo Bringen South, a sand in one with breakers bore N. W. $\frac{3}{4}$ W., other breakers S. W. $\frac{3}{4}$ W., and a reef on which breakers were visible at times, W. $\frac{1}{4}$ N.

There is also a reef under water to the E. N. E. of Tree Island, rendering the passage between it and Pulo Bringen unsafe.

Opposite to those dangers in the offing, there is a reef within 2 or 3 miles of the coast, on which the sea breaks in bad weather; it bears from Pulo Bringen N. 64° E., distant 16 miles, and is on with Tellore Bluff Point, bearing N. N. W. $\frac{3}{4}$ W. About 4 miles to the westward of it, there are 15 and 16 fathoms water, and 24 fathoms [illegible] the dangers in the offing.

To sail from Pulo Chenco, to

Departing from Pulo Chenco, or having passed through between it and Pulo Ayer *besar*, if a ship is bound to Ayer Raja, it will be prudent in coasting along, to keep 4 or 5 miles off shore, in soundings from 20 to 25 fathoms, to avoid the dangers near it; care will also

be requisite, to give a proper birth in passing, to the shoals and islands in the offing described above; more particularly in the night, for in the day, with a good look out, most of the dangers will be visible, and a ship may then borrow occasionally to 15 or 16 fathoms. When Pulo Bringen bears about W. S. W., she may haul to the eastward for the anchorage of Ayer Raja, which is not much frequented, being considered unsafe with N. W. and Westerly winds.

AYER RAJA, is not easily known, the village being about 2 miles up the river, but a flag is sometimes hoisted near the entrance. It may be known by a remarkable round hill covered with trees, near the sea, about 4 miles to the northward of the river's mouth, called by some Volcano Mount: when at anchor in 5½ fathoms soft clay, with the Flagstaff at the mouth of the river bearing E. by N. northerly, near 2 miles, this Mount will bear E. N. E. ⅜ N., and Pulo Bringen W. ⅜ N. It is prudent not to anchor under 8 fathoms, with the Flagstaff East, Pulo Bringen W. ½ N., and Indrapour Point S. ½ W., off shore about 2½ miles. If northwesters are apprehended, a ship may anchor out in 12 or 13 fathoms, in order to clear Indrapour Point, should she be unable to ride. Ayer Raja. Anchorage.

It is dangerous to enter the river with a boat at low water, particularly when there is much swell, for the surf is then high on the bar.

INDRAPOUR POINT, in lat. 2° 5′ S.,* lon. 100° 55′ E., by Capt. Wm. Owen's observations, or 1° 28′ West of Rat Island by chronometers, and 4½ leagues to the southward of Ayer Raja, is low, and its extremity covered with trees; as foul ground projects out a little way, it should not be approached too close. From this point the coast stretches to N. Eastward, and forms an extensive open bay between it and Ayer Raja, with Indrapour River at the bottom of it, a little to the southward of the latter place. From hence to Fort Marlborough, there are no islands near the coast, Pulo Bringen being the southernmost of the chain or long range, which may be said to commence at Passage Island, near Sinkel. Geo. site of Indrapour Point.

Leaving Ayer Raja, or the channel betwixt it and Pulo Bringen, a ship should haul out of the bay, and pass Indrapour Point at 3 or 4 miles distance; if the wind be steady, and bound to Bencoolen, a direct course may be steered along the coast, keeping from 2 to 4 or 5 leagues off; but with light winds, it will be proper to preserve moderate depths from 15 to 25 fathoms, for anchoring if requisite, never exceeding 30 fathoms, nor borrowing under 10 fathoms toward the shore, in case of getting into rocky ground. To pass it, and proceed to the southward.

MOCO MOCO, in about lat. 2° 34′ S., distant 11 or 12 leagues to the S. Eastward of Indrapour Point, situated at the bottom of a small bay, is an English settlement and a place of some trade; the 2 points that form it are covered with tall trees, and about 4 or 5 leagues to the N. Westward, a remarkable gap in the trees may be discerned in coming from that direction. Having passed Indrapour Point about 4 miles distance, a ship bound to Moco Moco should coast along about the same distance until near it, the houses and flagstaff will then be discerned, and she may anchor in 10 fathoms soft ground, with the latter bearing E. by N., and a remarkable peak inland N. E. ¼ N., off shore 2½ or 3 miles. Small vessels may, if requisite, anchor in 6, 7, or 8 fathoms. The country boats must be employed in landing, for a ship's boat cannot, without great danger, on account of the surf. Near to Moco Moco river, is situated that of Mandoota, the mouth of which may be seen in coming from the southward. About 3 or 4 leagues W. N. W. from Moco Moco, there is a bank of rocks and sand, having on it from 18 to 11 fathoms in most parts; but by some navigators it is thought to be dangerous, the sea breaking on it in blowing weather, and *said* to have only 2½ or 3 fathoms water on the shoalest part; consequently, it should be approached with caution. Moco Moco. Anchorage. A shoal.

* Some navigators place it in lat. 2° 10′ to 2° 12′ S.

Ayer Dicket. AYER DICKET, situated about 3 or 4 leagues to the southward of Moco Moco, and a little southward from a *bluff point* clothed with trees, may be known by a clump of tall trees, growing thicker on each side of the mouth of the river than any where else. There being a dangerous bar, the river is unnavigable, even for boats. A ship may anchor off it, in 8 or 10 fathoms.

A ship bound from the southward to Moco Moco, may round the bluff point to the North of Ayer Dicket in 8 or 9 fathoms, when the southerly monsoon prevails, and haul gradually into the bay, to prevent being driven to leeward. Between that point and Moco Moco, a shoal bank projects several miles from the shore, said to have only 4 and 5 fathoms rocky bottom on it in some places; and the coast is lined with a sandy beach, toward which, a great swell generally rolls, and this is the case on most parts of it, particularly to the south of the equator.

Adjoining coast.

Bantall; anchorage, BANTALL RIVER, situated in a bay about 4½ leagues to the S. Eastward of Ayer Dicket, may be known by 2 white cliffs a little to the northward of it, appearing from the offing like boats' sails: in coming from the north toward it, a ship may coast along in 10 to 15 fathoms, taking care not to borrow on the shore where the bottom is found rocky. The best anchorage in the road, is in 8 or 9 fathoms ouze and sandy bottom, with the white cliffs N. N. E., and the river's mouth N. E.

rivers, and contiguous coast. Between Bantall and Ipoe there are the 3 rivers, Triamang, Ayer Etam, and Ayer Ruttah; Triamang, the northernmost, may be known by a small red cliff forming the low point on the North side of the entrance; the coast, embracing those rivers, may be approached to 12 or 14 fathoms, regular soundings in most places.

Ipoe, and the coast adjacent. AYPOUR, or IPOE, situated about 6½ leagues to the S.E. of Bantall, where there is another river in the bottom of a bay, may be known by 3 red cliffs to the southward, and 3 green hills near the sea; with the central 1 of these bearing N. E. by E., large ships should not anchor under 9 or 10 fathoms, where the road is tolerably clear; farther in, the bottom is foul, and the water shoal.

A bank, and dangerous rock. From the shore to the southward of Ipoe, a bank of foul ground projects nearly 2 leagues to seaward, having on it from 6 to 10 fathoms, coral and coarse sand; and on its outer edge there is a coral rock on which the Swallowfield struck, bearing S. W. by S. 2 leagues from Ipoe, covered with only 14 feet water, and having from 8 to 16 fathoms all round. It should not be approached under 10 or 12 fathoms, being very steep; there are but a little way outside of it, 30, 40, and 50 fathoms, then no ground. When Ipoe bears N. E. by E., a ship is clear to the northward of the bank and rock, and may then haul nearer to the land if coming from the southward, but when abreast of this danger, she ought to keep about 3 leagues off shore.

How to avoid it.

Caytone; the coast and dangers near it. CAYTONE, in about lat. 3° 29′ S., distant about 6 leagues to the S. Eastward of Ipoe, has a white cliff to the southward like a castle, and breakers to the northward near a mile from the shore. Rocky ground with irregular soundings project about 2 leagues out from this place, and from hence northward, toward Ipoe; a ship, ought, therefore, to keep well out in sailing between them, for about 4 leagues off this part of the coast where no soundings are got, the water will shoal suddenly if she stand toward the shore. Nearly midway between Ipoe and Caytone, there is a small place called Sablat, appearing like an opening betwixt reddish cliffs; and Caytone has a similar appearance.

Directions to sail along shore.

And from Caytone to Fort Marlborough. From Caytone the distance is 8 or 9 leagues S. Eastward to Fort Marlborough, and the coast in this space is safe to approach occasionally to 11 or 12 fathoms, the soundings being more regular than farther to the northward; from 12 to 20 fathoms are good depths to preserve in sailing along.

LAYE, a small place about 2 leagues to the southward of Caytone, has regular soundings off it; when in 9 fathoms with the Sugar Loaf bearing E. by N., Laye House situated in a small bay, bears N. E. ¼ N. Polley, another small place, lies 1½ or 2 leagues more to the southward, having some red cliffs between it and the former place. Laye, and Polley.

Songy Lamo Point, about 2 leagues southward from Polley, and near 5 miles to the northward of Fort Marlborough, ought not to be approached under 10 fathoms, for a rock with only 2 or 2½ fathoms on it, and 7 fathoms close to, is distant about 1½ mile from the point, bearing from it and the Sugar Loaf when in the same transit line with each other, S. W. by W., and from the flagstaff on the steeple about N. W. by N. A rock off Songy Lamo Point, must be avoided.

BENCOOLEN RIVER'S entrance, situated at the bottom of the bay, about 1½ mile to the N. Eastward of the point on which Fort Marlborough is built, has from 4 to 6 feet on the bar, and from 8 to 12 feet inside. The English at first formed their settlement here, but they considered it unhealthy, and removed to the South point of the bay where Fort Marlborough now stands, on ground a little more elevated than the former, and is the seat of the English Government on the West coast of Sumatra. Bencoolen River.

FORT MARLBOROUGH, *vulgo*, Bencoolen, is in lat. 3° 48′ S., lon. 102° 28′ E., by mean of lunar observations taken by several navigators, and combined with chronometers. Captain William Rees made it 22° 7′ E. from Point de Gale, by 4 chronometers, their greatest difference 4 miles after a speedy passage from thence, which will place it in lon. 102° 27′ E. By the same chronometers, he made 4° 25′ E. from Fort Marlborough to Batavia, which will also place it in lon. 102° 27′ E., allowing Batavia to be in 106° 52′ E. The Fort and Town are built on Oojong Carrang, a point of land having a level appearance, and moderately elevated; but the land in the country to the North-eastward is high, and hilly; 1 of these having a conical form, called the Sugar Loaf, is the most conspicuous, serving as a mark to avoid the shoals adjoining to this place. Geo. site of Fort Marlborough.

The common anchorage in the road, is about midway betwixt Rat Island and the town, in 11 or 12 fathoms; under 11 fathoms the bottom is generally rocky, and also farther out, it is foul in some parts. The York anchored in 10½ fathoms with the flagstaff E. by N. ¼ N., Poolo Point S. S. E., and the Sugar Loaf N. E. ¼ N., distant about 3 miles from the Fort, and had her cable cut through by the rocks. She afterward anchored in 12 fathoms clear ground, with the flagstaff E. N. E., Poolo Point about S. E. by S., and Rat Island S. W. by S. In the Atlas, we lay 20 days in April and May, in 11 fathoms clear ground, Rat Island S. W., Sugar Loaf N. E., Flagstaff E. N. E. ½ N., Black Rock Breakers S. E., and Poolo Point S. S. E. ¼ E. A ship ought not to go under 11 fathoms, and if she is to remain in the road for a few days, it may be prudent to examine the bottom, by sounding about her in the boat within the range of the cable, for ships do not moor, unless it be with a hawser and small anchor, to steady them.

Close to the entrance of Rat Island Bason, and fronting it to the distance of a mile N. Eastward, the bottom is generally soft, where ships may anchor in 13½ or 14 fathoms under the reef that surrounds it, in the southerly monsoon. When the N. W. winds prevail strong, from September to March, a heavy sea frequently rolls into the road, making ships labour greatly at their anchors. Anchorage under Rat Island.

Captain Huddart, advises ships that do not go into Poolo Bay, or Rat Island Bason, in this season, to anchor to the eastward within a mile of the island, in about 15 fathoms, where the sea will be partly broken by the reef. The same business may be done from this station in favourable weather, as if a ship were in the road, for sailing boats passing to and from Fort Marlborough, are confined to 1 trip in 24 hours by the land and sea breezes; besides, the N. W. winds are those only to be dreaded, and if a ship part her cables, she may run for Poolo Bay with little or no canvass spread.

Inner Road. There is an inner road with 4 and 4½ fathoms water, a little to the northward of the Fort, and inside of the North and South breakers, which is sometimes frequented by small vessels in the fair season, for the convenience of loading and unloading. But if unacquainted, it is imprudent for boats or vessels of any kind, to venture inside without a guide, for several boats have been lost upon the North or South breakers, which are not always visible when the sea is smooth; for then, a high surge is only at times seen to roll over the rocks, which would prove fatal to any boat that unfortunately got into it.

A caution relative to passing the North and South breakers,

to proceed going in with a boat. To pass from the road in a boat, through the channel between the North and South breakers, steer from Rat Island toward the Sugar Loaf, keeping this rather on the starboard bow until the steeple appear on the West, or *Sea-Face*, of the nearest bastion; or until a very conspicuous tree appear behind the South end of the N. W. or *Sea-Curtain*, of the Fort; the boat will then in either case, be inside, or past the breakers, and may haul in close to the shore reef, keeping along the edge of it until within the Fort, and opposite to the landing wharf.

With a northerly wind, it is best to pass to the North and Eastward of the North breaker, by keeping 2 miles to the N. Westward of the Fort until the conspicuous tree is brought behind the N. E. end of the N. W., or *Sea-Curtain;* or bring the steeple behind the N. W. Face of the West Bastion, and you will avoid the North breaker, by passing to the N. Eastward of it.

With a southerly wind, when coming from the road, it is best to steer for the town, and pass to the southward of the South breaker, and close along the edge of the shore reef, from its outer extremity to the landing place.

Close to the North and South breakers, there are 7 and 8 fathoms on the outside, and 6 fathoms inside of them. Nearly abreast of the Fort, a little outside of the landing place, there is a *shoal patch* in 3½ fathoms, at a small distance from the edge of the shore reef, which is avoided by keeping close to the latter; or that patch may be passed on the North side, by keeping a *low* white house near the beach and the bushy tree nearly in a line with each other, when steering in for the landing place. This is protected from the sea by a rocky ledge fronting it at the distance of 150 yards; boats pass round the eastern point of this, and then haul in to the southward for the wharf.

Bullocks, poultry, fruits and vegetables of various kinds, may be got here, and the country around has a pleasant appearance. The variation of the compass here, and along the West coast of Sumatra, is at present about 1° East, and is nearly stationary.

Rat Island, RAT ISLAND, in lat. 3° 51′ S., bearing S. W. by W. from Fort Marlborough, distant about 6 miles, is surrounded by an extensive coral reef, partly dry at low water; which projects 1¼ mile to the N. W. of the island, and to the southward of it about ¾ of a mile. The island is low and small, having on it a few palmira trees, and some godowns, or houses for receiving pepper, with a small battery of guns for its protection. To the northward of the island, there is an excellent gut or bason in the N. E. side of the reef, with 5, 6, and 7 fathoms in it, and 3 or 2½ fathoms at its upper end. Ships requiring repair, or having a cargo to receive or deliver at Fort Marlborough, generally go into this bason, where they moor head and stern to anchors laid upon the bank on each side, or nearly in a N. W. and S. E. line, directly across the bason.

and Bason.

The passage into the bason is close to the edge of the reef on the West side of the entrance, for several detached rocky patches bound the East side, with 7 and 8 fathoms water close to them.

The bottom in the bason is soft mud and sand, and the coral bank on each side being a soft perpendicular wall, no injury is sustained if during the strong N. W. gales, a ship part her mooring junk or cable, and is driven against the S. E. side. Ships proceeding to the bason, generally anchor at the entrance, and warp into it; from this place, goods may

be conveyed to, or from Fort Marlborough, with the same facility as from the road, the boats being able to make a trip daily with the land and sea breezes. Here, a ship is completely sheltered from the sea by the reef; whereas, it often runs so high in the road, that goods are unsafe in the boats alongside, and they are frequently forced to run for shelter into Poolo Bay, the Northwesters sometimes giving so short a warning of their approach.

Poloo Bay.

POOLO BAY, situated about 3 leagues to the southward of Fort Marlborough, is an excellent harbour, secured from the sea by a neck of land on the North and West sides, which is generally called Poolo Point; that part fronting the sea is called the West point; and the eastern extremity, the East point; the latter is low and sandy, and forms the North side of the bay. When ships at anchor in the road, are unable to ride during strong N. Westers, they slip their cables if it is day-light, and run for Poolo Bay. In doing so, they should steer South and S. by E., taking care not to come under 12 fathoms until past the Black Rock, and *False* Black Rock, as they may not be always discernible in blowing weather, when the sea breaks much in the channel. They lie about half way between the road and Poolo Point, or 4 miles from the latter, and if the low sandy point of the bay is not brought to the southward of S. E., they will be avoided. When clear of the Black Rocks, a ship should haul to the eastward for Sillebar on the East side of the bay, and the depth will decrease gradually to 8 fathoms as the low sandy point that forms the opposite side is approached; which at low water may be rounded very close, and when it is high water, at the distance of a cable's length; she must then haul up under the South side of it, and anchor in 7 fathoms with the extremity bearing about North, distant from the company's pepper godowns a large ¼ mile. Near the shore, the South side of the bay is shoal and rocky, and it would be imprudent to run too far into the western angle of it, where there is 4 feet rocky shoal, the only 1 in the bay.

To run from the road clear of the black rocks, and from thence to the bay.

Anchorage.

If a ship should happen to lose all her anchors, she ought to haul close round the point, and when well inside of it, she may run on shore in the mud without fear, opposite to the nearest tree, having previously prepared a hawser to make fast to it with the boat.

If destitute of anchors, a ship may run on shore.

Sillebar River's entrance, to the N. W. of the bay, has 4 feet water on the bar; from whence it stretches both northward and southward, near, and parallel to the shore, the southern branch leading to a great lake contiguous to the sea, to the S. Eastward of Poolo Bay. The tide rises from 3½ to 5 feet in the springs, high water about 6 hours on full and change of the moon; the bay being surrounded with low swampy ground, is generally considered to be very unhealthy, and the water also of a pernicious quality;* it is, therefore, little frequented by ships.

Thought unhealthy, and the water pernicious.

Ships driven from their anchorage in the night, cannot run for Poolo Bay without the risk of getting on the low sandy point that forms it, for it will not be visible, nor do the soundings answer as a proper guide, there being 8 and 8½ fathoms very close to it, and nearly the same depths in a direct line from it to the N. N. Westward; it therefore, seems advisable, if a ship cannot ride during the night, to run out to sea, betwixt Rat Island and the Asia Shoal.

Unsafe to run for in the night.

DANGERS contiguous to this place, exclusive of the rock off Songy Lamo Point, and the North and South breakers off Fort Marlborough Point, already mentioned, are the following.

* The Royal Bishop moored in Rat Island Bason, in 1784, having her mizen-mast sprung, she sent the long boat with an officer and 19 men to Poolo Bay, for the mast of the Myrtle transport, that ship having been condemned there, on her passage from Bengal to England. They had provisions and 3 butts of good water, and were cautioned not to drink the water of Poolo Bay, notwithstanding, many of them whilst on shore drank of it, rather than take the trouble of going to the boat, which proved of fatal consequence to many of them; for the officer was confined to his bed during the passage home, and the boatswain, one quarter-master, and 8 men died during that passage. Poolo Bay is thought to be most unhealthy during the southerly monsoon.

Middle Shoal

Middle Shoal, with $4\frac{3}{4}$ fathoms rocks on it, is situated nearly midway between the South breaker and Black Rock, and is on with the Sugar Loaf bearing about N. 42° E.; close to it on the outside, there are 9 and 10 fathoms, and $8\frac{1}{2}$ fathoms inside.

Black Rock, and

CARRANG LAMPOOYANG, or BLACK ROCK, about $1\frac{1}{2}$ mile to the S. E. of the former, and nearly South from Marlborough $3\frac{1}{2}$ or 4 miles, is generally discernible by the sea breaking on it; inside of it the depths are 8 and 9 fathoms and the same outside, in a

False one.

small channel betwixt it and the False Black Rock, which lies about $\frac{1}{2}$ a mile West from the other, with $3\frac{3}{4}$ fathoms water on it. This danger is on with the Sugar Loaf bearing N. E. by N., and in one with the Flagstaff on the steeple, bearing from N. 3° E. to N. 7° E.

How to avoid them.

These shoals are avoided on the outside by keeping in above 11 fathoms, and by keeping in about 8 fathoms or rather less, a small vessel may occasionally pass inside of them.

Other shoals near Rat Island.

Carrang Byang Byang, and Carrang Ikan Tandoo, are 2 rocky shoals close together, with 5 and 6 fathoms water on them, bearing from Rat Island between West and W. N. W., distant 2 or $2\frac{1}{2}$ miles; and betwixt them and the reef surrounding the island, there is a passage

To avoid them,

nearly a mile wide, with 16 and 17 fathoms water. To avoid these shoals, Rat Island should not be approached nearer than 3 miles when it bears from East to E. S. E.; and as the Sugar Loaf bears from them N. E. $\frac{1}{2}$ E., it should in coming from seaward, be kept to the eastward of that bearing until Rat Island bears S. E., by a ship bound to the road or to Rat Island Bason, through the northern channel, which is spacious and safe. In working to,

and steer in by the North channel.

or from the road by this channel, a ship may stand near the edge of Rat Island Reef on the southward tack, and to 10 fathoms toward Songy Lambo Rock and the main.

Other dangers,

Carrang Ikan Chaby, are 2 small shoals with $4\frac{1}{2}$ and 5 fathoms rocks on them, distant about a mile E. N. E. from Rat Island, having a narrow channel with 10 and 12 fathoms betwixt them and Rat Island Reef; a vessel to pass through it, must keep within less than

and to avoid them.

150 fathoms of the Island Reef; or a full mile off Rat Island Reef, to pass outside of these shoals.

Asia Shoal.

CARRANG LEBAR, or ASIA SHOAL, extends East and West $1\frac{1}{2}$ mile, and is about a mile in breadth; although 4 fathoms is the least water that has been found on it, the bottom being coral and sand, there is a heavy ground swell on it, which sometimes breaks in bad weather; it ought therefore to be carefully avoided, more particularly, as it lies much in the way of ships approaching the road from the southward, and there may probably be less water on some spots, than 4 fathoms. From Rat Island, the East end of the shoal bears S. S. E. and the West or outer part S. by E., distant 5 miles; and from the West Point of Poolo Bay, the nearest part of the shoal bears about W. by S. $\frac{1}{2}$ S., distant 3 miles. The Sugar Loaf bears from the East end of it N. N. E. easterly, and from the West end N. E. by N. northerly.

To sail through the channels on either side of it.

To approach the road or Rat Island by the outside channel, between the island and shoal, a ship ought not to bring the island to the westward of N. $\frac{1}{2}$ W. until within 3 miles of it, then she may haul in for it and the road; or directly to the eastward, for Poloo Bay, if bound there. The depths between the shoal and Rat Island are from 22 to 17 fathoms, and in the other channel betwixt it and the main, generally 17 and 18 fathoms. Coming from the southward through this channel, a ship must keep within 2 miles of the West Point of Poolo Bay until it bear East, and may then steer for the island: the point may be approached within $\frac{1}{2}$, or $\frac{3}{4}$ of a mile occasionally in working, but a reef projects from it about $\frac{1}{3}$ of a mile, with 3 fathoms on its outer edge, and 13 or 14 fathoms close to.

To avoid the Asia Shoal fully on the West side, when going in or out by that channel, the island may in passing the shoal, be kept bearing North. The approac.. to this shoal may be known by the overfalls toward the outer edges of it, if the lead is kept going.

## 5th. COAST FROM MARLBOROUGH TO FLAT POINT, WITH SAILING DIRECTIONS.

BUFFALO POINT, in about lat. 3° 58′ S. a round bluff headland covered with trees, discernible from the Road of Fort Marlborough, is about 2½ miles to the southward of the West Point of Poolo Bay, and they are frequently considered as one and the same. From Buffalo Point, the coast of Sumatra extends S. E. about 58 leagues to the West part of Flat Point, which is the South point of this large island, and forms the entrance of Sunda Strait on the North side. The whole of this extent of coast, is generally bold and safe to approach, and the land mountainous a little in the country; soundings reach out from the land about Fort Marlborough and Poolo Bay, to the distance of 4 or 5 leagues: and from thence to Manna, regular soundings over a sandy bottom are found, where a ship may occasionally anchor in moderate depths, if it fall calm and the current be unfavorable; but farther to the southward, the coast becomes more steep, the soundings extending out only a short distance, until Little Fortune Island near Flat Point is approached, where soundings are got nearly 2 leagues from the main.

Buffalo Point, coast from thence to Flat Point.

MANNA POINT, in lat. 4° 33′ S., bearing nearly S. E. from Buffalo Point, distant 17 leagues, may be known by being a small hill with palmira trees on it, and is the next headland that projects considerably into the sea. Betwixt them, there are several small places; Moreallam, about 4 or 5 leagues from Buffalo Point; Saloomale, about 2 leagues farther; Pring in lat. 4° 21′ S., distant 11 leagues from Buffalo Point; Alass, 2 leagues more to the S. E.; and Penoo, near Manna. The coast in this space may be approached to 15 or 20 fathoms, and in some parts to 11 or 12 fathoms; but from 18 to 35 fathoms, are good depths to preserve in sailing along.

Manna Point, and places adjacent.

About 4 miles to the S. Eastward of Buffalo Point, there is a narrow spit with 7 fathoms rocks on it, 15 fathoms close to, on the outside, and 12 fathoms soft ground between it and the shore, from which it is distant about 2 miles. The spit extends parallel to the shore about ¼ mile, opposite to a low point of land, and the least water found on it has been 7 fathoms.

At Pring, the Company's ships sometimes anchor to receive pepper; they should anchor there, in 12 fathoms muddy bottom; for farther in, the ground is foul and rocky on the edge of a shoal, projecting about 2 or 3 miles off shore. With the resident's house bearing N. E. by E. ¼ E. distant about 3 miles, the Kent shoaled at once from 9 to 7 fathoms, and anchored during a strong gale, where she had the best bower cable cut to pieces in 1 night: about ¾ of a mile from the ship, the boat had 7 fathoms very rocky, and farther in, found the water shoal suddenly, the sea breaking there, when blowing fresh.

Anchorage at Pring.

Manna, is an English settlement near the point of that name; at this place the Company's ships touch, to take in pepper from thence and Penoo, and generally anchor in 10 or 12 fathoms. The Europa, at anchor taking in pepper at Penoo, had the house at Penoo bearing N. ½ E., and Manna E. by N. A small cascade falls perpendicularly from the steep cliffs, which line the shore near Manna, to which the Elgin East India ship dispatched a boat for water; but the boat was lost, and the crew perished in the tremendous surf, that generally prevails along this coast.

and at Manna.

Manna Point may be rounded in 14 fathoms, but not nearer, as a reef is said to project from it about a mile; to the southward of the point, there are 12 and 14 fathoms about 1½ mile from it; but no ground 50 fathoms at the distance of 2½ or 3 miles, for the coast to the S. Eastward becomes more steep. About 5 leagues S. E. from Manna, there is a place called Pathang, or Padang.

Cawoor, and the adjacent coast.

CAWOOR, in lat. 4° 56′ S., distant about 11 or 12 leagues to the S. E. of Manna, is an English settlement, near the South part of a concavity in the land about 5 miles in length, where, in the small bay of Cawoor, ships are sheltered from southerly winds; and, in Sambat Bay, which forms the North part of the concavity, there is good shelter from N. W. and Westerly winds in 9 or 10 fathoms, sand and muddy bottom. From Sambat River on the East side, to Secooniet or Bandar Point, that forms the western extremity, this bay is about 2½ miles wide, having the village Bandar at the N. W. side, where there is a small river, and a level country.

From the anchorage in the bay, Mount Poogong may be seen over the other land bearing E. S. E.

The anchorage at Cawoor is in 11 or 12 fathoms, with the resident's house bearing about E. N. E., distant 1 mile, the South point of the bay S. by E. or S. ¾ E., 1½ mile, and the western extreme of the land W. N. W., about 3½ miles.

The passage for boats going to the factory, is betwixt 2 coral banks, and very narrow, with breakers on each side; about 100 yards to the westward of the factory, there is a small black rock, on the western bank, which must be kept very near on the larboard hand. Steering out from the anchorage to the westward, the depth increases regularly, but rather suddenly, from 14 fathoms in the road, to 42 fathoms sand and shells, a little way outside of the bay. About ½ a mile from the shore, outside of the South point, there is 40 fathoms water, and 20 fathoms close to the breakers.

Geo. site of Pulo Pisang.

PULO PISANG, in lat. 5° 8′ S., lon. 104° 6½′ E., by Capt. William Owen's observations, bears from the South point of Cawoor Bay about S. E. by E., distant 8 leagues; the coast between them is steep, and no soundings got except very close in. Point Poogong, about 3 leagues from Pulo Pisang, projects a little into the sea; and Mount Poogong in lat. 5° 4′ S., is a high remarkable mountain, situated near the sea, which bears nearly North from the same island, and may be discerned a great way from the offing. Pulo Pisang is of round form, about a mile in diameter, consisting chiefly of a bed of rock chrystal, and on

Anchorage,

the East side between it and the main, there is good anhcorage and shelter from N. W. and Westerly winds, in 12 or 15 fathoms. The Revenge moored in 16 fathoms with the island bearing from S. W. ½ S. to W. N. W., Sillaloo Rock at Crooe S. E. ½ E., extremes of Sumatra from S. S. E. to W. N. W. ½ N., and the rocks about 50 yards off the S E. part of the island S. W. by S. Southerly, distance from the island 3 cables lengths, and from the main ¾ of a mile.

and contiguous shoals.

To the northward of the island, about ½ way between it and the main, there is a reef of rocks on which the sea generally breaks, having 12 and 16 fathoms on the South side, 20 fathoms on the West side, 12 fathoms foul ground to the northward; and about North or N. by W. from the reef, there is a patch of coral rock with 2 fathoms on it, seeming to preclude any safe passage for large ships betwixt the reef and Sumatra shore. Between the N. W. end of the island and reef, the depths are from 10 to 18 fathoms; but to the eastward of the latter, the water is shoal; with foul ground, generally from 4 or 4½, to 3 fathoms on the visible patches of coral rock. This shoal water and foul ground, extends from the North part of the island in a N. N. Easterly direction toward the main, so that it would be imprudent for a ship drawing much water to endeavour to pass between the island and the Sumatra shore; but a small ship by keeping about 2 cables lengths from the island, may come in from the northward, or pass out that way. Wood and water may be got on the main, to the N. E. of the island, and the soundings are regular in the road, from the East side of the island close to the shore of Sumatra. A reef lines the outside of the island, stretching to a small distance, from which the depth increases quickly in standing to the southward, there being 36 and 40 fathoms about a ¼ mile off.

CROOE, in lat. 5° 15′ S., about 7 miles S. E. by E. from Pulo Pisang, and situated at the bottom of the bay, is an English settlement, on the bank of a small river, close to the northward of Sillaloo Rock, navigable by small boats at high water. All round the bay, from abreast of Pulo Pisang to Crooe, soundings of 35 fathoms are got about a ½ mile from the shore, and they extend farther out from the latter place: but care is required, if working into Crooe Road, to avoid a Dangerous Rocky Shoal, discovered by Mr. M°Kellar, of H. M. S. Billequeux, which ship touched here, and procured good water, bullocks, buffalos, and other refreshments. Crooe and the adjoining coast.

This shoal bears about N. ¼ W. from Sillaloo Rock 1¼ mile, from a remarkable tree near the shore at the bottom of the bay it bears S. W., and is about ½ a mile distant from the nearest shore, and from the anchorage of Crooe about N. by W. ¾ of a mile. There is 1½ fathom water upon this rocky shoal, 14 and 15 fathoms inside of it, and 18 or 20 fathoms to the southward, between it and the anchorage of Crooe. Dangerous Shoal.

Sillaloo Rock, appears like an island when seen at a distance; foul ground projects from it about 2 cables lengths into 10 fathoms, from thence sandy bottom to 54 fathoms about ¾ mile off shore. The anchorage is safe here, in the S. E. monsoon, being well sheltered from these winds by Carrang Pingan, the point that forms the South side of the bay, off which there are no soundings about 2 cables lengths from the breakers, and 40 fathoms close to.

BENCOONAT, in lat. 5° 35′ S., bearing about S. E. from Pulo Pisang, 8 or 9 leagues, is a small town or village subject to Crooe, situated on the North side of a low point, having on it Palmira trees: the bay here, is interspersed with rocks, which stretch out near a league from the point, but there is a passage for boats or very small vessels, close along the shore. Siggen Point, about 3 leagues to the N. W., forming the western extremity of the bay, has a reef projecting about a mile or more, with 20 fathoms close to; and between Crooe Bay and that of Bencoonat, soundings extend a little way from the land. The coast hereabout, and farther to the southward, is generally low fronting the sea, but inland the country is mountainous. A ship intending to touch at Bencoonat, should anchor well out, to avoid the rocky ground. Bencoonat.

LITTLE FORTUNE ISLAND, called by the natives PULO BATOA KETCHEEL, in lat. 5° 54′ S., distant about 4 miles from the main, bears nearly S. E. by S. from Bencoonat 8 leagues; and it is low and woody, about a mile in diameter. Along the coast between them, soundings are found 3 or 4 miles from the shore; and in the vicinity of the island, the bank becomes more regular, and extends farther out, having soundings on it from 2 to 3 leagues off the main. About 4 leagues to the northward of Little Fortune Island, a low point of land forms the northern extreme of a bay, where there is a village. When that Point bears North easterly, the Sugar Loaf N. E. ¾ E., and the island S. E. ¼ S. 10 miles, there is 27 fathoms sandy bottom, about 3 miles off shore. Little Fortune Island.

This island is environed by a reef, but there is good anchorage about a mile to the eastward of it, in 8 or 9 fathoms, and a passage betwixt it and the main, with various depths, from 5 or 6, to 12 and 13 fathoms. There is also good anchorage in BILLIMBING BAY on the opposite shore, a little to the northward of the South end of Sumatra, where a ship may lie in 7 or 8 fathoms at the entrance of the bay, and small vessels may lie in 3 fathoms inside, sheltered from all winds. The small river Billimbing is on the East side of the bay, and there is fresh water at the S. W. side, inside of the point that forms it, from which a reef projects to the northward about ¼ mile. Capt. W. Owen at anchor in this bay, in H. M. S. Baracouta, observed in lat. 5° 54′ S., Samanca Peak E. by N. ½ N., Billimbing Point S. E. ½ S., outer breaker of its reef S. S. E. ¼ E., Little Fortune Island W. ¼ S. Anchorage under it, and at Billimbing Bay.

The soundings are a guide in passing outside of the island in the night, and from thence round Flat Point, for they extend rather more than 2 leagues off shore; and the bank is very

flat round the island. A ship coasting along with the wind from the land, and favorable weather, may borrow into 15 fathoms occasionally if the lead is kept going; in the Atlas, we borrowed to 12 fathoms, when passing Fortune Island and the land about Flat Point, during the night; but that seems too near, particularly in a large ship.

Bank of soundings.

The bank of soundings extends far South from Flat Point, otherwise there must be a *detached bank* a great way out from it, on which the 2 following ships had soundings, as will appear by an extract from their journals.

Bridgewater, 7th February, 1816, lat. observed at noon 6° 15′ S., the body of Keysers Island bearing N. 24° E., Low or Flat Point N. 17° E., southern extreme of Princes Island S. 47° E., sounded and had ground 54 fathoms.

Atlas, 7th February, 1816, with the island Crockatoa bearing E. by N. ¾ N., and the low land about Flat Point, on Sumatra, N. by E. at noon, had soundings of 50 fathoms, having steered 2 miles S. W. by W. from being in 28 fathoms at 11 A. M. About 5 leagues W. S. W. from Flat Point, there is a coral bank of 30 fathoms placed in some Dutch charts.

Geo. situ of Flat Point, the land around.

FLAT POINT, in lat. 6° 0′ S., lon. 104° 40′ E., distant about 3 leagues to the S. Eastward of Little Fortune Island, is the S. Westernmost extremity of Sumatra, bounding the entrance of Sunda Strait on the North side; and the narrow neck of land by which it is formed, separates the deep inlet called Keyser's Bay, on the East side, from Billimbing Bay and Fortune Island on the opposite side. The South part of this neck of land is low and woody, extending 3 leagues nearly East and West, the East end of it bounding the entrance of Keyser's Bay, and called Tanjong Chinna, by others Flat Point; but the West end of this low land, is here, considered as Flat Point, and lies about 30 miles to the westward of Java Head. The ship Speke, in 1793, anchored on the East side of Flat Point in 17 fathoms sand, about ¾ of a mile from the shore, where she filled up her water, and was sheltered from N. Westers.

## *PRINCIPAL ISLANDS fronting the WEST COAST of SUMATRA; with SAILING DIRECTIONS.*

PRIOR to any description of the islands off the West coast of Sumatra, it may be proper in this section, to notice some *supposed* dangers, said to lie to the westward of Achen Head, 1 of which, called the Bale of Cotton Rock, has been long dreaded by navigators; its existence, is nevertheless, very *doubtful*.

Bale of Cotton Rock.

BALE OF COTTON ROCK, *said* to have been seen in the country ship London, bound from Bengal to Bombay in 1767, which ship passed within ½ a mile of it, at noon on the 5th of May, and made it in lat. 5° 22′ N., and lon. 87° 57′ E. *by account*, from Point Palmiras. It appeared about 2 feet above water, 40 feet long, half that breadth, of a dark brown colour, and had something like moss upon it. They had no soundings in passing, nor did they send a boat to examine whether it was *really* a rock.

This is the substance of a letter from Mr. Callendar, then on board the London; although another account states that he was upon the rock, which is inconsistent with his letter.

Mr. Douglas, an officer in the Countess of Errol, country ship, *is said* to have been upon the Bale of Cotton Rock, in 1794, who made it in lat. 5° 25′ N., lon. 87° 48′ E., and found

it formed like a ship's bottom, covered with barnacles, about 230 yards in length, and nearly 6 feet above water, having soundings 120 and 130 fathoms on the East side, and on the N. W. and South sides, no ground.

Captain Le Meme, of the La Unie, French privateer, has stated, that he was on the Bale of Cotton Rock, in December, 1797, and made it in lat. 5° 18′ N., lon. 90° 40′ E., from Greenwich, by chronometer and lunar observations. He described it to be a small island, 25 or 30 feet above the surface of the sea, about 50 or 60 feet long, and 20 feet in breadth, situated on a sand bank extending about 300 feet in a N. E. and S. W. direction. About a boat's length from it, there is 20 fathoms water; at ½ a mile distance, no ground 100 fathoms.

Another danger or reef, is *said* to have been seen by Le Meme, in January, 1797, which he made in lat. 1° 20′ N., lon. 94° 20′ E. Night approaching, the boat could not land upon it, but it appeared to be 8 or 10 feet above water, about a mile long from East to West, and no soundings 1 mile from it. Another doubtful danger.

That this reef, and the Bale of Cotton Rock, described by Le Meme, *may exist*, is perhaps not impossible, and a good look out is certainly proper, in ships which approach the situations assigned to them; there is, however, great reason to doubt the veracity of these statements, for, on enquiry in India, I never could obtain any information relative to Mr. Douglas, or the Countess of Errol; and probably Le Meme's statement does not merit much confidence. Unfortunately for navigation, some persons through timidity, *discover* dangers where none *really* exist, and few that see an *imaginary* danger, examine it sufficiently to ascertain its real existence beyond doubt. Another commander, is said to have seen lately the Bale of Cotton Rock, but there is cause to doubt its existence.

COCOS, in lat. 3° 6′ N., lon. 95° 12′ E., or 17½ miles West of the N. W. extremity of Hog Island, bearing from it N. W., distant about 7 leagues, are 2 small, low islands, covered with trees, separated from each other by a channel 1½ or 2 miles wide, which is probably not safe, as breakers project out a little way from the islands, with some islets or rocks close to the northernmost. Geo. site of Cocos Islands.

The channel between the North end of Hog Island and the Cocos, should be approached with great caution in a large ship, as a shoal bank is described in the journal of the ship Jane, to extend about 4 leagues in a S. S. E. direction from the largest Coco Island, on which, steering to the N. E. she shoaled suddenly to 7 and 6½ fathoms. At sun set, on the 13th of June, 1812, the Cocos Islands bore N. ¾ W., and the N. W. point of Hog Island East, when rocks were observed under the bottom, had ¼ less 7 fathoms hard sand, then 6½ fathoms: wore, and stood to the southward, increasing the depth regularly from 6½ to 8, 10, 12, 14, 20, and to 28 fathoms, sand and small black stones. Channel between them and Hog Island unsafe.

The following extract from the Greyhound packet's journal, also shews, that the above mentioned channel is dangerous, unless a ship borrow toward Hog Island.

February 24th, 1783, at 1 P. M. saw breakers bearing E. S. E. ½ S., and to appearance, there is broken or shoal water all the way from these breakers to the Cocos, which then bore N. E. by N., and the North end of Hog Island East. We stood within 1½ mile of the breakers, which are very dangerous, and if a ship stand in to the eastward between Hog Island and the Cocos, she ought never to bring the southernmost Coco to the northward of N. E., unless her distance from it is above 4 leagues.

Although ripplings occasioned by the currents or tides among these islands, sometimes resemble breakers, and are liable to deceive navigators; yet, it appears, by the above description taken from the journals of these 2 ships, that the channel between the North end of Hog Island and the Cocos, is really dangerous.

HOG ISLAND, the northernmost of the large islands fronting the West coast of Sumatra, distant from it 17 or 18 leagues, extends nearly N. W. by W. and S. E. by E. about Geo. site of Hog Island

15 leagues, the North Point being in about lat. 2° 50′ N., lon. 95° 30′ E.,* the South end in lat. 2° 21′ N., and it is about 3 to 4 leagues broad. It is high and hilly, covered with trees, and may be seen 9 or 10 leagues; several islets lie near the shore on both sides, and 3 or 4 leagues from the South point, in lat. 2° 10′ N. lie the 2 Flat Islands, betwixt which and the South end of Hog Island, there is a good passage about 3½ or 4 leagues wide, having no soundings at 70 fathoms, within 2 miles of the northernmost Flat Island, but the Baring found 26 fathoms in mid-channel, coral soundings. The water is in general deep near these islands, but on both sides of Hog Island, there are sudden overfalls on several coral patches, that lie 1 or 2 leagues off shore. On 1 of these, which bears about South from the S.W. point of it, there are very irregular soundings, from 30 to 20, and to 7 fathoms, or probably less water: about 2½ miles outside of 1 of the islets that front the East end of the island, there is a 2 fathoms coral shoal, with 90 fathoms no ground close to it. As there is no inducement for a ship to stop at this island, nor any safe anchorage about it known to navigators, they seldom or never land there, although it is probable, there may be a harbour within some of the islets that line its eastern side. There is about 4 or 5 miles to the westward of the North point of the island, and 2 miles from 2 islets off that part, a coral shoal with 4 or 5 fathoms on it, or perhaps less water.

Capt. Lamb, in the Baring, experienced strong N. W. winds and southerly currents late in December, 1815, which prevented him from gaining ground to the northward, on the West side of Hog Island: but after passing round its southern extremity, he got the wind favorable for proceeding to the northward, and found no southerly current in coasting along the eastern side of the island.

Pulo Baniak and adjacent islets.

PULO BANIAK, or BANIA,† distant 10 or 11 leagues E. S. eastward from the South end of Hog Island, consist of 2 principal islands a little separated, 1 lying to the N. eastward of the other, with several small ones contiguous to them. From the S. E. side of the easternmost or large island, a chain of islets, and some shoals project considerably, but by keeping near the Baniaks, there is said to be a safe channel between them and Passage Island, which is the easternmost of the chain. At the North end of Baniak, there is a bay in lat. 2° 18′ N., with coral shoals and a group of islands fronting it; there is a passage into it betwixt the 2 westernmost islands, and shelter inside, in from 16 to 9 fathoms water; a ship may also anchor outside of these islands, but the soundings are very irregular, and the bottom generally coral. The North end of Baniak, and the adjoining islands that form this bay, bear nearly East from the 2 Flat Islands off the South end of Hog Island, and there is a channel between them 8 leagues broad. On the northernmost Baniak Island, there is a peaked hill like a sugar loaf. The southern extremity of the S. westernmost island is in lat. 2° 0′ N., and East from this extreme, there is a passage betwixt the 1st and 2d island that lie off the S. E. end of the N. easternmost large island, with irregular soundings in it, corally bottom. An 3d island which is round and high, of the same appearance as the 2d, lies to the southward of it 5 or 6 miles, and there are various depths in a safe passage betwixt them, generally from 36 to 28 and 19 fathoms, by keeping nearly in mid-channel. Ships coming from the westward, if bound direct to Tappanooly with a fair wind, should steer for these islands, and pass to the southward of them, or between the 2 southernmost, then proceed to the eastward for Bird Island, leaving it on the starboard hand; having cleared the latter, and the shoal to the N. W. of it, a direct course may be steered for the North entrance of Tappanooly Bay. Some persons adopt the channel to the northward of Pulo Baniak, and

To pass them, and toward Tappanooly.

* The Alfred's chronometers, corresponding nearly with observations taken by Capt. Heywood, and with the London's chronometers, made it in this longitude, which is probably near the truth; although some other observations in my possession, would place it 10 leagues more easterly.

† Pulo Bania, i. e. many islands.

from thence steer East, to go between Passage Island and the coast, as the channel between Pulo Baniak and Hog Island, and that between the former and the North end of Pulo Nyas, are equally safe.

Geo. site of Pulo Nyas.

PULO NYAS, NAYS, or NIAS, the largest of the islands off the West coast of Sumatra, extends from lat. 1° 35′ N., lon. 96° 45′ E., nearly in a S. E. direction to lat. 0° 28′ N., and is 6 or 7 leagues in breadth. The northern extreme bears South from Pulo Baniak, about 9 or 10 leagues, and about 3 leagues to the N. N. E. of this extremity, lies the small island Pulo Baby, with a 40 fathoms bank close to it on the South side, and a safe channel between it and the North end of Pulo Nyas. Many other small islands line the shores of the principal I, at different places, some of which, particularly on the West side, stretch out about 3 leagues, also a shoal at the same distance from the N. W. part of the island. Although the coast is steep in some places, there is anchorage inside of the group of small islands on the S. W. side, at the entrance of Seirombo River; also at a harbour close to the South point, there is good anchorage in an excellent bay, where bullocks, buffalos, goats, and poultry, are in great abundance, and water easily procured. The natives are said to be friendly, and of a different character from the generality of Malays. There is anchorage inside of the islands and shoals at the East point of the principal island, at the mouth of Nyas River: there is also, other places where a ship might anchor occasionally on the N. E. side, and betwixt the East and South points of the island. There is a fine river, about S. S. E. from Pulo Baby, where a ship may anchor in 10 or 11 fathoms, about North from the river. In general, the land is high, well clothed with trees, partly cultivated by the natives for rice, and this island was formerly, well inhabited: the people are of small stature, and fairer than those of the adjacent coast, the women more particularly, have always been in great demand at Batavia, and other Dutch settlements; therefore, from 500 to 600 of the natives have been annually purchased here, and carried away in the small vessels employed on this trade.

Pulo Nyas bearing from E. N. E. to E. by S., 8 or 9 leagues estimated distance, at 10 A. M. 31st October, 1812, Capt. Bean of the ship Lady Barlow, saw breakers from the poop bearing E. N. E., distant only 2 miles. Steered S. S. E. 5 miles till noon, when the observed lat. was 0° 37′ N., lon. 96° 32′ E., by a good chronometer.

If this was a *real* danger, seen by Capt. Bean, it lies much farther from Pulo Nyas than the situation hitherto assigned to any of the reefs fronting the West side of that island. It seems probable, that the supposed danger here stated, might be the effect of strong currents or tides, producing ripplings like breakers, but it will be proper to keep a good look out in this situation.

Geo. site of Clapps Island.

CLAPPS ISLAND, (called Clappers Island by the Dutch) situated on the equator, in lon. 97° 34′ E., distant about 10 or 11 leagues S. by E. from the South end of Pulo Nyas, and 7 or 8 leagues West from the N. W. end of Pulo Mintao, is low, covered with trees, and having some gaps in it, give it the appearance of several small isles, when first seen above the horizon. On the 6th and 7th of March, 1783, the Greyhound packet was near it, and describes a very dangerous ridge of breakers to extend along the island to the distance of 3 or 4 miles.

Capt. Forrest, saw this island in the night, and called it a low flat island. The brig Olive Branch, also got near to it, on the 26th of September, 1808, and describes it to be a low island with gaps in it: the wind then blowing very hard at N. W., she lost her main-mast, and was forced to bear away through the channel between Mintao and Se Beeroo, to refit at Padang. In February and March, the current sets strong out to the S. W. in the vicinity of these islands.

Geo. site of Mintao.

PULO MINTAO, named so by the Portuguese, called formerly by the English NAN-

TIAN, but BATOA* is said to be the name given to it by the natives, is the next large island to the S. Eastward of Pulo Nyas, extending from lat. 0° 1′ S., lon. 98° 10′ E., in a southerly direction to lat. 0° 41′ S., being about 14 leagues in length, and 5 or 6 in breadth. This, like the other large islands is moderately elevated and hilly, covered with trees, and many small islands line its shores both on the East and West sides, with moderate depths among them, and some of them form safe bays or harbours, little known to Europeans. The N. E. point of the island is a bluff, with a reef projecting a ¼ mile from it, and a few miles to the southward, on the East side, is formed a bay called Lams Bay by the Dutch, in about lat. 0° 5′ S., where the Greyhound packet lay several days in March, 1783, and procured a few poultry, pigs, and cocoa-nuts, at a dear rate, from some natives who came from the North part of the island, and the water got in a creek on the Mintao shore, was brackish.

The Greyhound, when moored in 16 fathoms sand and shells, nearly in mid-channel between Mintao and the island that forms the East side of the bay, had the extremes of Mintao bearing from N. 35° W., to S. 28° E., the island forming the East side of the bay from S. 36° E. to S. 80° E., off the N. E. end of which projects a long reef, dry at low water; 2 other islands from N. 5° E. to N. 67° E., off the nearest shore ½ a mile. The mouth of an inlet also bore S. 64° W., which was found to be an arm of the sea, separating a low island about 3 miles round, from Mintao; and the other mouth of the inlet, is nearly opposite to the South point of the island on the East side of the bay, distant from each other ½ a mile.

After leaving this bay, the Greyhound, in steering for the N. E. point of Mintao, found the deepest water by keeping from the Mintao shore, toward the small island on the East side of the channel, having never less than 9 fathoms, except 1 cast of 7 fathoms; and this is said to be the only channel into Lams Bay, there being no passage in to the southward.

The North part of the island does not extend above 11 or 12 miles East and West, forming a bay between the bluff point and another point about 3 miles West of it, which is foul on the East side near 2 cable's lengths from the shore, but the reef on the West side may be approached close. Two ships may be sheltered in this bay from southerly winds, but it is open to the northerly monsoon; and the Greyhound could not find any fresh water here, although it is the best place for refreshments, this part being inhabited, which is not the case at Lams Bay. The Greyhound anchored in 18 fathoms sand, off the bluff point 1½ mile, Mintao from S. E. ¾ S., to W. by S. ¼ S., the outer small isle W. by N. ½ N., Pulo Penir from E. ¾ N., to N. E. ½ N.

The Greyhound weighed from hence on the 26th of March, 1783, and steered to the eastward for the bluff N. E. point of the island, and rounded the reef in 7 fathoms at noon, within ½ a mile of the point, lat. observed 0° 1′ N. At 3 P. M. anchored in 10 fathoms good ground, about ¼ mile to the southward of the first small island in shore, to the southward of the point, and about 3 miles nearer to it than when in Lams Bay, extremes of Mintao from N. 32° W. to S. 31° E., Pulo Penir from N. 66° E. to the North end, shut in with a small island N. 20° E., the Watering Creek's mouth S. 19° W., distant ½ a mile. Here, she moored, unbent sails, and lay upward of a month, caulking the upperworks, &c., procured plenty of firewood, and water in the creek, which is probably scarce in the dry season, as the boat was obliged to go 3 miles up the creek on spring tides to fill the water, which was then indifferent, and few supplies were obtained from the natives, although the chief of the island visited the ship, so that she was obliged to go to Natal for supplies.

It is said, that the Padang boats go annually to Mintao for dammer and oil.

The West coast of the island extends about North and South nearly 40 miles, fronted by a chain of about 18 or 20 isles of various sizes, some of them several miles distant from the main island, dangerous to approach, being lined with reefs and high breakers, and no sound-

* Europeans generally apply this name to the island inside, between it and the coast of Sumatra.

ings very near them. About a league from the South point of the main island, there is a small sloping island, situated in about lat. 0° 45′ S., said to have soundings of 30 to 40 fathoms between it and the point, with reefs to the S. E. and southward, between it and the N. W. end of Se Beeroo.

PULO BATOA, called also Penir or Pingey, but Cassanie is said to be the name given to it by the natives, situated about 6 or 7 leagues to the N. Eastward of the North end of Mintao, nearly mid-way between it and Natal, is of considerable extent, stretching nearly East and West, having some islets and shoals off its S. E. end, which have been already mentioned in the description of the coast of Sumatra, and a chain of islands and shoals extend from it over toward Mintao. The South end of Batoa bears E. by N. from the N. E. point of Mintao. Pulo Batoa.

A ship coming from the westward, and bound to Natal, may proceed through the great channel formed between the South end of Pulo Nyas and these islands, leaving Mintao and Batoa to the southward. This channel is safe with a good look out, but the prudent navigator will be cautious when near any of the islands during the night, as they are not yet sufficiently explored.

SE BEEROO, or NORTH PORA, called Great Fortune, by the Dutch, extends nearly N. W. and S. E. about 23 leagues, the North point being in lat. 0° 56′ S., lon. 98° 38′ E., by lunar observations, and bears nearly S. E. from the South end of Pulo Mintao, distant about 8 or 9 leagues, which is the breadth of SE BEEROO CHANNEL, formed between these islands, but directly in the middle of it there is an extensive reef of breakers, which is in one with the small island off the South end of Pulo Mintao bearing N. W. and N. W. by N. This reef is very extensive, for the brig Olive Branch, in passing to the southward of it on the 27th of September, 1808, saw the breakers extend toward Mintao as far as they could be discerned from the mast-head, and the southern part of them seemed to be about mid-channel between Mintao and Se Beeroo. When the breakers bore E. by N. ½ N. distant about 1 mile, she had no ground 70 fathoms; but after passing the reef and bringing it to bear to the westward, she got on a rocky bank with overfalls from 15 to 20 fathoms, when the South part of Mintao bore N. W. by W. about 5 leagues, and the extremes of Se Beeroo from S. ½ W. to E. S. E.; steering from thence eastward, at a moderate distance from Se Beeroo, the depths increased to 25 and 30 fathoms, and shortly afterward to no ground. The proper channel from the reef to the North end of Se Beeroo, is about 4 leagues broad, having soundings from 15 to 26 fathoms in it, by keeping within 3 or 4 miles of Se Beeroo: a little to the westward of a direct line drawn from the West end of the reef to the N. W. part of that island, there are no soundings, nor any to the eastward of the North point of the island, at the distance of 3 miles from the shore. The N. W. point of Se Beeroo is in lat. 1° 0′ S., and 5 or 6 leagues to the westward of the North point of the same island, forming the entrance of the channel on the South side. Although little frequented, this appears to be a good channel, and convenient for ships bound from the westward to Padang, because it lies opposite to that place. When N. W. winds prevail, a ship steering for it ought to keep well to the northward, and make the South end of Pulo Mintao, then steer to the S. Eastward for the N. W. part of Se Beeroo, to give a birth to the reef between them; afterward, she may keep within 3 or 4 miles of the northern side of the latter island, in steering to the eastward through the channel; a stranger, however, ought not to run through it in the night, unless in a case of necessity. Geo. site of Se Beeroo. Channel between it and Mintao. To sail through it.

This channel has been lately more frequented than formerly; the ship Elizabeth, Capt. Wells, went through it on the 3d of February, 1755, and Capt. G. Hayter, then 2d mate of that ship, made a plan of it. Capt. Bennet has gone through it several times; Capt. Owen, also made a plan of this channel, in his passage through it in January, 1812, in H. M. S. Cornelia.

The ship Hermes, of Calcutta, Capt. Holl, was unfortunately wrecked on the reef South of Mintao, that bounds the North side of the channel, a few years ago, by not keeping over toward the North end of Se Beeroo. The Cornelia, got soundings of 27 fathoms, about 5 miles W. by N. from the N. W. point of Se Beeroo, and by keeping within 4 miles of the North coast of this island, she carried regular soundings of 20 and 19 fathoms through the channel, and the breakers on the mid-channel shoal, were only seen from the mast-head.

Se Beeroo, is generally high land, and covered with wood, higher in the middle than toward the extremities, with a sandy beach in many parts, and a great surf breaking often upon the shore. On the N. E. side, some small islands are said to lie a little way off; others are situated near the S. W. side and South point: betwixt these and the principal island, there is a channel with regular soundings from 16 to 20 fathoms, according to the description of the Snow Jenny, which vessel, in January 1769, went through it, between the small islands and Se Beeroo; and to pass through it, her directions are nearly as follows.

Channel close to the S. W. part of Se Beeroo.

A ship intending to proceed for the Sumatra Coast, by the channel between Mintao and Se Beeroo, and having been forced to leeward of it by N. W. winds, may occasionally pass through the strait to the southward of the latter. Steer in for the West side of Se Beeroo, with the highest part of the land bearing about E. N. E., but not more to the northward until in 17 or 18 fathoms white clay, which soundings will continue by keeping about mid-channel between it and the small islands that front its S. W. end. Having run along until the 3d island (counting from N. Westward) is brought to bear about West, the North point of the strait will be seen to the eastward. A boat may be kept a-head in steering to the eastward, and the point on the South side of the strait, will soon be discerned, known by 2 tall trees about half a cable's length from the other trees, standing on the extremity of the point among the rocks. The passage is clear until abreast of this point, but in steering from it to the eastward, a good look out from the mast-head is requisite, with a boat a-head sounding, for in this part of the passage there are many rocks on both sides, projecting from the islands that lie contiguous to the passage. The easternmost island near Se Pora, may be approached close in passing, to avoid great overfalls and shoal soundings on the North side of the strait, and a reef of breakers projecting from the S. Easternmost island off Se Beeroo. When this reef is brought to bear N. W. by W., the depth will be 45 fathoms, and farther eastward, no ground.

On the S. W. side of Se Beeroo, there are white cliffs a little to the northward of the N. Westernmost island that forms the channel, and this island has breakers and foul ground stretching from it to the N. W. and Westward.

Geo. site of the S. W. point of Se Beeroo.

S. W. point of Se Beeroo, is in lat. 1° 47′ S., lon. 99° 2′ E. by Captain Torin's observations, agreeing nearly with others taken in the Walpole; and the southern extremity is about 3 leagues more to the eastward, and a little farther south.

Seaflower's Channel.

SEAFLOWER'S CHANNEL, situated between the Islands Se Beeroo and Se Pora, to English navigators appears to be a new discovery, made by Capt. W. Owen, who passed through it in H. M. Brig Seaflower, on the 10th of November, 1806, during the night. Being in lat. 2° 18′ S., lon. 99° 5′ E. at noon, with the appearance of a clear passage open to the N. Eastward, between the Islands Se Beeroo and Se Pora, he steered for it N. E. by E., and afterward N. E. in passing through the channel, which he entered in the evening, and got clear of it about 10 P. M. This channel is bounded on the West side by an islet that lies near the S. E. point of Se Beeroo, and on the East side by the N. W. end of Se Pora and an islet near the North end of the latter. These islets bear about E. ½ N. and W. ½ S. of each other, distant 12 or 13 miles, and when about half way between them in mid-channel at 8½ P. M. the Seaflower's place was lat. 2° 0′ S., lon. 99° 33′ E. or 1° 20½′ W. from Indrapour Point by chronometer. The islet off Se Beeroo that forms the West side of the channel appeared to be in lat. 2° 1′ S. deduced from noon observation, and 1° 26′ West from

Geo. site.

Indrapour Point. Capt. Owen, describes this channel to be 8 miles wide, clear of danger, and they got no soundings at 30 fathoms in passing through.

The Seaflower, went through this channel again, in 1808, steering about N. by E. ½ E. until clear of it to the Eastward; and several ships have passed through it since that time.

These observations of Capt. Owen, make the South end of Se Beeroo about 11 or 12 miles to the southward of Capt. Torins's observations, which is very remarkable, as both are scientific navigators.

The Seaflower's Channel, described above, certainly cannot be that through which the Jenny passed, as the latter was found to be intricate and winding, not above a mile wide in some parts, with soundings of 16, 20, and 25 fathoms; whereas, the Seaflower's Channel is 8 miles wide, and apparently clear of danger. The Jenny, therefore, must have passed close to the S. W. and South end of Se Beeroo, within the islands which front this part of it, and form the N. W. and West sides of Seaflower's Channel; otherwise, there must be a gut or strait through Se Beeroo, in about lat. 1° 45′ S. through which this vessel went, if her description be correct.

Geo. site of Se Pora.

SE PORA, or SOUTH PORA, extends from the N. W. point in about lat. 2° 0′ S., in a direction nearly S. E. to Point Marlborough, in lat. 2° 25′ S., lon. 99° 58′ E. which is the South point of the island; it being about 12 leagues in length, and nearly half that breadth at the North part, decreasing gradually to the southern extremity. It is mostly covered with wood, rather less elevated than Se Beeroo, and both these islands are distant about 17 leagues from the coast of Sumatra. A little eastward of the N. W. point of Se Pora, HURLOCKS BAY is situated, directly South of the small islands which front the shore, with soft ground in it and moderate depths for anchorage; and there is a narrow channel leading from it to an inner bay or harbour, farther inland to the S. W. The outer bay being open to N. E. winds, the inner one must be preferred, and in passing through the narrow channel, the starboard shore should be approached more close than the opposite side, which is rocky. This harbour is sheltered from all winds, inside of the point on the starboard side, where there is a red sandy beach, and anchorage in 8 to 10 fathoms, or in 5 or 6 fathoms, close to the shore; the depths in the narrow passage going in, are from 4 to 6 or 7 fathoms. Captain Whiteway, who discovered this bay, makes the North coast of Se Pora extend East and E. S. Eastward from it about 3½ leagues to Cape Tilleroo the N. E. extreme of the island, with a small island called Pulo Se Gere, adjoining to the coast, from which to the entrance of Hurlocks Bay, a reef projects a great way out from the shore.

Hurlocks Bay.

The East coast of Se Pora, extends from Cape Tilleroo S. S. E. about 10 leagues to Point Marlborough, and in this space, contains 2 considerable bays; Se Ooban Bay, about 3 leagues to the southward of Cape Tilleroo, and Se Labba Bay, 7 or 8 miles more to the southward.

Se Ooban Bay.

Se Ooban Bay, may be known by a large *tuft* of trees on the starboard side going in; the course into it is S. W., and a ship should keep in mid-channel, (where there are from 24 to 30 fathoms,) to avoid the rocks projecting from the points on each side of the entrance. There is a brook of fresh water at the N. W. part of the bay, but the best anchorage is in the South part, with the point on the South side of the entrance bearing about N. E., in moderate depths from 8 to 12 or 14 fathoms. After a ship has anchored, it will be proper to examine the bottom around her, by sounding in the boat, for in some parts there are patches of coral rock.

Se Labba Bay.

Se Labba Bay, is known by a round peaked hill close to its South side, called Turk's Cap, situated in lat. 2° 17′ S., which is seen from both sides of the island. In entering this bay the course is about S. W., and the depths 45 and 40 fathoms, decreasing to 14 or 12 fathoms inside. Rocks project from both points, but farthest from that on the South side of the entrance, which must have a good birth in passing. There is a coral shoal nearly in the

middle of the bay, even with the water's edge, to the southward of which, the bottom is mud and proper for anchorage. At either of these bays, a ship may be supplied with wood, water, a few hogs, yams, some poultry, and cocoanuts, from the people of the few straggling villages on this side of the island; but the West side, is said to be destitute of inhabitants.

Between Cape Tilleroo and Point Marlborough, the East coast of Se Pora is generally steep, but rocks project a considerable way from the shore in some places, particularly to the southward of the Turk's Cap; and from abreast of it, soundings extend along the coast toward Point Marlborough.

The West coast is also rocky, with some small islands adjoining, and the sea breaks high upon the shore; 2 of these islands, situated about 4 leagues to the westward of Point Marlborough, lie close to the shore, and near each other; they are low and flat, covered with cocoanuts, and rocky to seaward.

The channel between the South end of Se Pora and North Poggy Island, is about 3 leagues broad and very safe; there are soundings from 20 to 40 fathoms on a coral bank that stretches across betwixt the islands, when the Turk's Cap and Point Marlborough are in one, bearing about N. W. by N.; and a little farther to the eastward, there is no ground. Point Marlborough is bluff, and moderately elevated, fronted by adjoining rocks.

North Poggy. NORTH POGGY, or NORTH NASSAU ISLAND, is about 7 leagues long from N. N. W. to S. S. E., and about half that breadth; the North point, called Cape Cuddalore, being in lat. 2° 32′ S., and bearing S. E. from Point Marlborough on Se Pora, distant about 10 miles; the South point situated in lat. 2° 52′ S., forms the West side of Se Cockup Strait, which separates the North and South Poggy Islands from each other. They are both high, covered with wood, and may be seen 14 or 15 leagues.

the adjoining islands, On the West coast of North Poggy, there is a group of islands, with passages and anchorage between the northernmost of them, called Pulo Laubo Laubo; but the best channel to the anchorage, is round the North end of this island, from which projects a reef; and on the East side, betwixt the island and the Poggy shore, is the road, where a ship may anchor in 12 or 13 fathoms, sheltered from all winds excepting those that blow from northward. Se Laubo Laubo village, is situated on the side of a rivulet at the S. E. side of the bay, where water may be procured.

and Se Cockup Strait. Battoo Mongo, another village, lies near the S. W. point of the island, which is low land, and from thence to the South entrance of the strait of Se Cockup, the coast stretches nearly East about 3 leagues, and is very rocky, with high breakers upon the shore. This Strait is of semicircular form, containing several small islands at the southern part, and 1 at the other end, which opens to the eastward; and although safe, it is not a mile wide in some places. The passage to enter from the southward is between the islands off its mouth, 1 called Pulo Serasso contiguous to North Poggy, and 2 called Pulo Supaw, near South Poggy, by keeping in mid-channel; and on the West side of the other islands inside, where the depths are from 10 to 15 fathoms. On both sides of the N. W. point of South Poggy, which projects out into the middle of the strait, there are small bays or coves, with soft bottom and regular soundings, where a ship may occasionally anchor out of the tide; for it runs 3 knots at times, in the middle of the passage.

Se Cockup River, is opposite to this point, on the western shore, where fresh water may be procured, and the village of that name is several miles up the river; there is also fresh water under the high land at North Poggy S. E. point, which forms the North side of the eastern entrance of the strait. This entrance is very narrow, the small Island Tongo being midway between the points, and both these and the island having rocks projecting a little way from them; but there is 20 fathoms in the middle of the narrow passage, betwixt the island and South Poggy Point. A little outside of the strait, about ½ a mile eastward from the point on the North side, there is a reef of rocks even with the water's edge. Pulo Se-

rasso at the South end of the strait, is separated from North Poggy by a very narrow channel, with from 5 to 10 feet water in it, fronting which there is a small island, having a rock upon it resembling a thatched house when viewed from the S. W. The sea breaks with great violence upon the rock, and upon the low rocky shore to the westward.

Geo. site of South Poggy.

SOUTH POGGY, or SOUTH NASSAU ISLAND, extends from the North point at the East end of Se Cockup Strait, in lat. 2° 50′ S., about S. E. by S. 11 or 12 leagues to the South point in lat. 3° 20′ S., about lon. 100° 34′ E.;* and it is from 3 to 4 leagues in breadth. Several small islands lie contiguous to the western coast, and on the East side, a little to the northward of the South point of the island, 4 small islands form a circular group, with a harbour inside of them: the channel between the 2 northernmost islands has 10 fathoms in it, and there is from 6 to 14 fathoms inside of the harbour. This is generally called Southeast Harbour, which is the only place of shelter on the East side of South Poggy, but soundings extend along it to the North point, where a vessel may occasionally anchor opposite to some of the small villages.

The sea coast of the Poggy Islands, in several places where the land is low, abounds with cocoanuts; some small spots have been planted with pepper vines, but the natives are averse to labour. It is said, that on each of the 3 large islands, North, and South Poggy, and Se Pora, there were about 800 inhabitants, when Captain Forrest was there about 30 years ago. The tide among these, and the other islands which form the chain, rises from 3 to 5 feet in the springs; but currents are often found to run with the prevailing winds.

Islands Larg, and Bergen.

LAAGE, or LARG,† and BERGEN, are 2 small islands situated to the East, and S. Eastward of the South end of South Poggy; Larg bearing from it about S. E. by E. 9 leagues, in lat. 3° 30′ S., lon. 1° 12′ West from Rat Island by chronometers, and a small round island with trees on it, lies nearly close to the East side of Larg, joined to the reef which surrounds them. Bergen bears about N. W. by N. from Larg distant 4 or 4½ leagues, and the channel between them is safe.

coral banks adjacent.

There appear to be some coral banks to the westward of Larg, very little known; probably they are not dangerous. The Europa, on the 2d of May, 1797, steering E. S. E. to pass to the southward of Larg, at 11 A. M. had ground 33 fathoms, next cast 17, 10, 9, 8, and 7 fathoms; she then hauled off S. W. and deepened in half an hour to 65 fathoms no ground. When in 7 fathoms, upon this coral shoal, the East point of Larg bore E. by N. about 3 leagues; and at noon it bore E. by N. 4 leagues, when the observed lat. was 3° 32′ S. Until this shoal is better known, it will be prudent to keep 4 leagues from the West side of Larg, in steering to pass it to the southward. The channel between Larg and South Poggy, seems wide and safe, according to the account of the ship Addington, which passed through it in July, 1804, or rather the channel between Larg and Bergen, which Capt. Owen passed through in H. M. Sloop Baracouta in February, 1811.

Geo. site of Trieste Island

TRIESTE, or REEFS ISLAND, in lat. 4° 3′ S., about lon. 101° 22′ E., or 22 leagues to the westward of Fort Marlborough,‡ may be seen about 5 leagues from the deck of a large ship. It is small, nearly environed by a reef, but there is a coral bank of soundings close under it on the East side, where a vessel may anchor occasionally, if drifted near to it by the current during calm weather; and some fresh water may be got upon the island, in the rainy season. The channel between this island and Larg, is spacious and safe.

* Capt. W. Owen made the South end of this Island in lat. 3° 21′ S. and 1° 34′ West of Rat Island by chronometer, when passing in H. M. Sloops Baracouta and Samarang in February, 1811.

† In the Dutch charts, these 2 islands, are marked *Laage* and *Bergen*, signifying that the former is *Low*, and the other *High*, which have been transmuted by the English into real names, by the corruption of *Laage* into *Larg*.

‡ Capt. Owen, made it in lat. 4° 3½′ S. and about 1° 8′ West of Rat Island.

Island Engano.

ENGANO, the southernmost of the large islands fronting the West coast of Sumatra, and distant from it about 20 leagues, is from 6 to 8 leagues in extent, of triangular form, having a level appearance when viewed far off, and may be discerned about 7 or 8 leagues from the deck. It is fortified by a rocky shore, with high breakers mostly all round, the rocky ledges projecting out 2 or 3 miles in some places, with irregular soundings about a league farther out, over a bottom of coral rock. When passing the South end of the island in the Atlas, about 2 leagues distance, we had 23 fathoms red and yellow coral rock; at the same time, high breakers on the reefs appeared about midway between us and the shore. On the East side, to the northward of the S. E. point, there is a bay inside of 4 small islands, with anchorage over a sandy bottom, and shelter from most winds in the upper part of it, which extends considerably into the land. The islands are surrounded by rocks, except the innermost small 1, of a sandy soil, has 3 or 4 fathoms close to, on the inside; and there is anchorage near it, over a sandy bottom. The channel leading into the bay, is betwixt the 2 outermost islands having 18 fathoms coral rock in mid-channel, and 7 to 4 fathoms white sand inside, between the inner island and the North point of the bay, and here it is narrow and bounded by rocks. To the northward of the bay, there is a small stream of fresh water, but the landing in most parts is difficult; it abounds with good timber, fine fish, yams, and cocoanuts. Capt. Owen, visited this island in November, 1806, in H. M. Sloop Seaflower, and H. M. Ship Dover, grounded near Amsterdam Island, the largest of those fronting the bay, on the 24th of November, 1809. When at anchor in 5 fathoms between the islands for the convenience of watering, the lat. observed was 5° 27′ S. the S. E. point of Engano bearing S. by W. $\frac{1}{4}$ W, East point N. by W. $\frac{1}{4}$ W., Eastern Island North to N. N. E. $\frac{3}{4}$ E., Western Island S. $\frac{3}{4}$ E., Small Green Islet S. W. $\frac{3}{4}$ S., Watering Place S. W. $\frac{1}{4}$ W. Whilst watering here, the crews of the Dover's boats were attacked by the natives, and several of the people speared.

Geo. site.

Capt. Owen's observations, agree with those of the Dover in placing the anchorage between the islands in lat. 5° 27′ S., lon. 102° 38′ E.: the North point of the principal island he made in lat. 5° 12′ S., lon. 102° 20′ E., and the South point appeared to be in lat. 5° 39′ S., lon. 102° 26′ E. or 5 miles East of Rat Island, Fort Marlborough.

I made the South point in lon. 102° 17′ E. by lunar observations, and 2° 58′ West from the peak on the East part of Princes Island, which places it nearly in the same longitude, or 9 miles West of its position by Capt. Owen. An observation at noon taken in the Snow Fancy, would place the South point in lat. 5° 35′ S., but probably it may be in lat. 5° 39′ S., as stated by the above named officer. The island is well inhabited, by people nearly of the same colour, but stouter, and more active than the Malays, and go without clothing. They are armed with spears made of hard wood, pointed with bone or iron, which they use for striking fish, and they have canoes that carry 6 or 8 men.

Ships steering for Sunda Strait during the N. W. monsoon, generally endeavour to make this island, when not confident of the reckoning.

## *SAILING DIRECTIONS to, and from the STRAIT of SUNDA, and toward the STRAITS EAST of JAVA: NORTH COAST of the former, and adjoining ISLANDS.*

To sail from Hindoostan to Sunda Strait, be-

SHIPS proceeding from Ceylon or the Coromandel Coast for Sunda Strait, whilst the S. W. monsoon is prevailing in North latitude, and the S. E. monsoon in South latitude,

from March to October, ought to run down great part of their easting with the S. W. monsoon, before they cross the equator. If they cross it in lon. 93° or 94° E., Southerly and S. S. Westerly winds, with variable squalls, may be expected to carry them to the S. Eastward; and a reasonable distance from the islands off the West coast of Sumatra may be preserved, by making a tack to the S. Westward at times, when the wind veers to the S. E. A drain of current to the northward may sometimes be experienced, but a ship will generally make considerable progress to the S. Eastward by taking every advantage of the shifts of wind; for, in the vicinity of the islands, or within a few degrees of them, the winds hang much from South and S. S. Westward; whereas, in the ocean, far to the westward, the monsoon will be found to prevail from the S. E. as a ship advances into South latitude, which will greatly prolong her passage, should she have crossed the equator far to the westward. tween March and October;

If bound to Fort Marlborough, it will be prudent to get into the parallel of that place before the islands are approached, then steer in for the coast to the southward of Trieste Island, or betwixt it and Larg, as the winds may render necessary. If a ship is bound direct to Sunda Strait, it will be proper to keep well out from the land until she reach the entrance of the strait, where her progress will generally be more speedy than by keeping near the shore; although a fast sailing vessel may pass along the coast backward and forward, between Fort Marlborough and Sunda Strait, in either monsoon.

SHIPS bound to Sunda Strait, from October to March, when the N. W. monsoon generally prevails to the southward of the equator, may follow nearly the same track recommended above for the opposite season; if they depart from the Coromandel coast, and are enabled to run down a considerable part of their easting with the N. E. monsoon, before they cross the equator. and during the opposite season.

Ships departing from Ceylon, in October, November, March and April, (when N. W. winds are seldom found to prevail *much* in South latitude) ought to stand off nearly close to the wind, if it blow from the N. E. quarter, and endeavour to make several degrees of easting before they are forced close to the equator by the N. E. monsoon, which they will probably experience in November, and March, at leaving Ceylon. In December, January, and February, this may not be always necessary, for the N. W. monsoon generally blows strongest in these months to the southward of the equator, particularly in the latter part of December, all January, and part of February. In these months, ships may shape a direct course from the South, or S. E. part of Ceylon, toward the entrance of Sunda Strait; but, even at this time, it is prudent to stand to the E. S. Eastward with the N. E. monsoon, until the bay is well open, to avoid strong westerly currents and light winds, which are liable to prevail in November and December, on the meridian of Ceylon, nearly to the equator; and in the space comprised between that meridian and the Maldiva Islands.

SHIPS bound to any of the straits East of Java, ought, in the strength of the N. W. monsoon, to make the Island Noesa Baron, in order to correct their reckoning; for in December and January, the weather is often thick near the South coast of Java, with strong westerly winds and easterly currents. Should a ship fall in with that coast much farther to the westward, and coast along it at the distance of 4 or 5 leagues, she will generally have the winds more brisk near the shore, than if farther out in the offing. To steer for the straits East of Java.

Captain J. A. Pope, in the ship Minerva, bound from Bombay to China, with the Ardasier in company, left Ceylon on the 11th of December, 1808, and fell in with Steep Point on the 31st; they steered a direct course from Ceylon, and were considerably delayed by light winds. On the South coast of Java, they had fine weather and light breezes; which enabled them to make the following observations in coasting along.

From Steep Point, in lon. 107° 23′ E., by chronometer, a course E. by S. will carry a ship in sight of a remarkable bold headland, in lon. 111° 6′ E., which appears to be the eastern-

most point of a very deep bay, called in some charts, Inland Bay. About 80 miles E. by S. from this headland, is situated the point and islets of Tangala, and 2 remarkable hills near the shore to the westward.

From the isles of Tangala, the course is E. by S. ½ S. 70 miles to Noesa Baron, which the Minerva passed near, made the East point of Java on the 5th of January, 1809, and anchored on the 9th, at Bally Town, in the Strait of Allass.

In November and December, strong westerly currents South of Ceylon.

The Anna bound to China by Sunda Strait, was embarrassed a considerable time in November and December, to the southward of Ceylon, by light winds and strong westerly currents; and she did not reach Sunda Strait, till the 3d of January, 1793.

The Britannia left Ceylon for Amboina, on the 6th of December, 1800, and with North, N. W., and West winds, she only reached lat. 3° 0′ N., lon. 81° 0′ E., on the 11th, having experienced a daily current of 60 miles, and sometimes more, steering to the W. N. W. and Westward.* The current then abated, and changed to the eastward on the 12th; she crossed the equator on the 16th, and with a continuance of W. N. W. and W. S. W. winds and changeable currents, mostly setting to the eastward, she saw the South coast of Java on the 26th; had then strong westerly winds, squally weather, and rain, with a current of 30 miles on some days to the eastward, with which she anchored in Sapy Bay, on the 1st of Jan. 1801.

Abstracts of passages from Ceylon to the Island Java.

The Canton, and fleet for China, in company, left Ceylon on the 30th of December, 1796, made the S. E. part of Java, on the 27th of January, 1797, and anchored in Allass Strait on the 29th.

In the latter part of November, and the first part of December, 1794, the Woodford, and fleet, for China, had brisk westerly winds steering direct from Ceylon to Sunda Strait.

In the Atlas, we left Point de Galle for Batavia, on the 8th of January, 1786, and 2 days kept nearly close hauled to the N. E. monsoon, blowing then fresh at N. E. by E., which decreased on the day following, and was succeeded by variable breezes. On the 12th, in lat. 2° 40′ N., lon. 83½° E., a strong N. N. W. monsoon commenced, with which we crossed the equator on the 15th, in lon. 91° E.; the wind veered afterward to West, and continued mostly between N. W. and S. W., with cloudy weather and much rain, until in lat. 5½° S., lon. 100° E., we had faint breezes 3 days: strong N. W. winds returned, with which we passed Engano on the 25th, and entered Sunda Strait on the following day.

In February, light winds frequently are experienced in the track between Ceylon and the N. W. end of Sumatra; if, therefore, a ship, after leaving that island, meet with light winds in North latitude, she should approach the equator without loss of time, where N. Westerly and variable winds may generally be expected in February, and part of March.

Instructions for approaching Java Head,

INSTRUCTIONS for approaching JAVA HEAD, throughout the year, are given in Vol. 1st of this work, under the title "Directions to sail from St. Paul, to the Strait of Sunda." Nevertheless, it may sometimes be expedient, to deviate in some degree from *general* rules, as the winds and currents are liable to differ in some months of 1 year, from their direction in the corresponding months of another year, as may be seen by the following example.

In May and June, it is always thought safe to fall in with the land to the eastward of Java Head, if bound into Sunda Strait, as the S. E. monsoon generally prevails in these months along the South coast of Java. The Cadogan, however, fell in with Java Head on the 24th of May, 1729, and experienced variable winds from the westward, with S. Easterly

* Although the Anna, Britannia, and some other ships, have experienced strong westerly currents to the southward of Ceylon in November and December, which prolonged their passage, and the former had very light winds; this does not always happen, for the Bahar left Cape Comorin on the 16th of December, steered from thence S. S. E., crossed the equator on the 20th; here, she got strong N. W. winds, and made a quick passage to Sunda Strait. The Sulivan, several years after, followed the same track as the Bahar did, and was equally fortunate.

currents, which kept her working in sight of the head till the 10th of June, and prevented her from reaching Bencoolen until the 20th of this month.

The Montagu, bound to Amoy in China, fell in with the South coast of Java well to the eastward of Java Head on the 8th of October, 1703, where she had variable baffling winds, and a constant current of 2 to 2½ miles per hour setting to the eastward. She got soundings generally within 3 or 4 leagues of the coast, excepting in the great bay to the East of Java Head, no ground was obtained with 100 fathoms line within a mile of the shore. Although she frequently anchored, to prevent losing ground by the current, and ultimately got S. E. and Easterly winds, yet she did not get round Java Head, into the strait until the 22d of that month. It is therefore, advisable, to steer nearly direct for Java Head, in most seasons, if a ship's longitude is correctly known, borrowing a little to the eastward or westward when it is approached, as may be required by the prevailing wind, or other circumstances at the time.

SHIPS bound from JAVA HEAD for Bombay, ought to run down their westing in the S. E. trade, and adopt the southern route, between the Chagos and Seychelle Islands, from March to September. Should they approach near the equator early in April, or in October, when N. W. and Northerly winds prevail in North latitude at the changing of the monsoons, they may if the wind incline from the West and N. W., steer to the northward on the East side of the Maldiva Islands, and endeavour not to fall in with the Malabar Coast until past Calicut or Mount Dilly. But if several degrees to the westward of the Maldiva Islands when the equator is approached, the best passage to Bombay may be expected in April, part of September, and October, by keeping to the westward of the Islands, and avoiding the coast. and to sail from it toward Hindoostan.

From October till March, it will be advisable to cross the equator nearly on the meridian of the South end of Ceylon, as westerly winds are liable to prevail near the equator and from thence a few degrees to the northward, which will be favorable for steering to fall in with the land about Dondre Head or Point de Galle; afterward they may cross the Gulf of Manar, and follow the directions for sailing along the Malabar Coast, given in the first volume of this work, under the head "Monsoons, Land and Sea-breezes, and Currents, on the Western side of Hindoostan."

Ships bound from Java Head to Madras in the S. W. monsoon, ought to make the Friar's Hood on the East part of Ceylon, or at all events not fall to the northward of their port. If bound to Madras or Bengal in the N. E. monsoon, they ought to borrow within 2° or 3° of Hog Island or Achen Head, in passing into the Bay of Bengal, and follow the directions given for ships proceeding from Europe by the "Outer Passage, to places on either side the Bay of Bengal."

SUNDA STRAIT, has 2 channels which lead into it from the westward, the small channel between the West end of Java and Prince's Island, and the great channel to the northward of this island, betwixt it and the South coast of Sumatra, now to be described; this coast is indented by 2 large bays, and several islands and rocks front it of various sizes. Entrance of Sunda Strait.

SEMANKO, or KEYSER'S BAY, formed to the North and N. E. of Tanjong Chinna, projects into the land about 5 leagues in a N. Westerly direction, and is about 3 leagues wide, having various depths from 50 to 100 fathoms at the entrance, to 10 and 15 fathoms inside along the western shore, and at the upper part, where the anchorage is good over a muddy bottom: the village of Borne stands close to the N. W. end of the bay, where there are some shoal rivulets; the shores are generally low, and the land marshy near the sea, but in some places there are pepper plantations. The ship Speke, in 1793, anchored in 15 fathoms about 1½ mile E. N. E. from the mouth of Borne rivulet, which the long boat could not enter; here, refreshments of all kinds were procured from the Dutch Resident. A little inland from the N. W. angle of the bay, stands a high conical mountain, called Samanca Keyser's Bay and contiguous land.

or Semanco Peak, also Keyser's Peak; and to the eastward, between it and Lampoon Bay, there are other mountains, the highest of them called Lampoon Peak: these mountains are discernible a great way at sea, in clear weather, by ships running for Sunda Strait.

Keyser's Island.

Tubooan, or Keyser's Island, situated in the middle of the entrance of the bay, is high, bold, and safe to approach, the channel on either side of it being spacious and clear of danger; but the water is deep, and the bottom rocky in some places. On the N. E. side of the island there is anchorage in 15 or 16 fathoms, sandy bottom, about a mile from the shore; and near the East point, there is a salt water creek, having 6 feet water at the entrance, with fresh water at its head, where a supply may be procured. There are some pepper plantations on the island, and tall trees at the East end, fit for masts. There is an excellent harbour, with 5, 6, and 7 fathoms water in it, near the East point of Keyser's Bay, which may be known by some islets close to the entrance, 1 of them resembling a sugar loaf. This seems to be the place called Kilzang Harbour in some charts, and there is a small cove farther to the East, near Tanjong Tekoos.

Lampoon Bay and the islands adjoining.

LAMPOON BAY, formed between Tanjong Tekoos to the West, and Rajah Bassa to the eastward, is very extensive, being 6 or 7 leagues wide at the entrance, stretching northward into the land nearly the same distance. From Tanjong Tekoos, the West point of the bay, a chain of islands extends a considerable way to the eastward, having channels betwixt some of them, and between them and the point, with soundings from 40 to 20 fathoms. Other islands line the western shores of the bay inside, between which and the main, there are several good roads or places of shelter, formed by the adjoining islands and shoals, with small villages opposite to them on the main.

Pulo Lagoondy.

PULO LAGOONDY, or GOONDY, the outermost and largest island, is separated from Tanjong Tekoos by a channel about $\frac{1}{2}$ or $\frac{3}{4}$ of a mile wide, with 30 or 40 fathoms in it, and no soundings outside in the entrance, which seems to render it rather intricate for large ships, as it is formed by high land, liable to produce eddy winds, accompanied at times by strong currents. But with a leading land-breeze in the morning, a ship might run out through it with safety.

The fleet from China, having watered at Rajah Bassa, worked across Lampoon Bay to keep in smooth water on the weather shore, intending to pass out at the West side of the bay between Tanjong Tekoos and Pulo Goondy, but the Arniston having struck on a rock about $\frac{1}{4}$ a mile to the N. E. of the small Island Oomowoomang, which lies near the North end of Pulo Goondy, induced the fleet to pass out to the eastward of it and the adjoining islands, in a good channel formed by these on the West side, and the small Isle Pulo Saradong to the eastward called also Tims Islet, which on the East side is covered with brushwood. When in this channel, Crockatoa Peak bore South.

Nangga Harbour.

On the North side of Pulo Goondy, a small bay is formed called Nangga Harbour, with the small Island Pulo Patappan in the middle of the entrance, on the East side of which is the best passage into the harbour, by borrowing near the shore of Pulo Goondy; here, the depths are from 15 to 10 fathoms, and from 12 to 7 fathoms inside the harbour, where a ship may moor secured from all winds, and careen if necessary.

Capt. Owen, careened His Majesty's sloop Baracouta here, in February, 1811, and moored with the West extreme of the harbour bearing N. W. 1 mile, East extreme N. E. $\frac{1}{2}$ N. 1 mile, West extreme of Pulo Patappan N. by W. 2 cables lengths, East extreme of the same N. N. E. 2 cables lengths, distant from the bottom of the harbour 1 mile, and from the reef 1 cable's length. Lat. observed 5° 46′ S., lon. 105° 4′ E.

Geo. site.

Rajah Bassa Road.

RAJAH BASSA ROAD, situated directly under the highland called Refreshment Head, that forms the East side of Lampoon Bay, has lately been visited by the homeward-

bound China ships, being an excellent place for procuring good water with facility, and turtle at 1 dollar each, a few fowls, buffalos, oranges, and plantains, may be got for coarse cutlery, as the natives seemed to care little for dollars, when the fleet touched here in Feb. 1815, under convoy of his H. M. S. Grampus, Capt. Collier. The Winchelsea* anchored in 12 fathoms blue mud, with Rajah Bassa Peak N. E. by E. ½ E., extremes from N. ¼ E. to S. E. ½ E., off shore 1½ mile, which is a good birth for watering, there being 2 runs of fine water issuing from the high land nearly abreast, and another to the eastward of Cocoanut Point, either of which would supply a fleet of ships.

The fleet from China, under convoy of H. M. S. Cornelia, Capt. William Owen, anchored here on the 21st of January, 1813, the Neptune in 16 fathoms blue mud, had the westernmost of the Three Brothers bearing S. 56° W., Crockatoa Peak in one with the high land of Pulo Sebese S. 20° W. off the nearest of the Three Brothers 3½ miles, and from the Rajah Bassa shore 3 miles. Large ships ought not to anchor under 10 fathoms, for although the soundings decrease regularly over a soft bottom to 6 or 7 fathoms in general, yet, the shore is fronted by a rocky bank, which projects out to 5 or 6 fathoms in some place, and is steep to.

Rajah Bassa Peak, called also Ejow Peak, is about 1600 feet high, the anchorage of the road opposite, Capt. Owen made by observation in lat. 5° 50′ S., and it is about 7 miles East of Crockatoa Peak, or in lon. 105° 32′ E. The water deepens to 25 and 27 fathoms toward the Three Brothers, which isles lie about 4 miles W. by N. from Cocoanut Point; and there is 18 fathoms in the gut between the Middle and South Brothers: these 3 islands appear as 1 in coming from eastward, and do not begin to open until Rajah Bassa Road is approached. The depths from Rajah Bassa Road across Lampoon Bay to Pulo Goondy, are from 13 to 19 fathoms, regular soundings and good anchorage. Geo. site.

The South extreme of Rajah Bassa Road called Cocoanut Point, is low, with cocoanut trees overhanging it, from whence the coast trends easterly, forming a concavity between it and Hog Point; the land is rather low near the latter, but rises gradually to an elevated peak, about a league eastward of Cocoanut Point.

TANJONG TOCA, or HOG POINT, situated about 4 leagues to the S. Eastward of the East point of Lampoon Bay, in lat. 5° 54′ S., lon. 105° 43½′ E., or 1° 8½′ West from Batavia by chronometer, is the S. Easternmost extremity of Sumatra, and bounds the Strait of Sunda on the North side. Geo. site of Hog Point.

There is a rock 6 or 7 feet above water, 2 miles N. W. from Hog Point, called Collier's Rock, being about 50 feet in circuit, and 50 feet distant from it, lies a coral rock under water. These are about a mile distant from the shore, with 50 or 55 fathoms water close to, on the outside. There is another rock above water bearing South from Hog Point distant ⅔ of a mile, with 65 or 70 fathoms outside of it, and deep water between it and the point, which seems steep to, as no bottom could be got with the hand-lead in sounding close to it with a boat. Adjacent Rocks.

ZUTPHEN ISLANDS, called also HOUNDS, or HOG ISLANDS, front the coast of Sumatra to the N. Eastward of Hog Point; there are several shoals and islets between them and the main, among which there is said to be anchorage in some places. The largest of these islands, and part of the coast adjacent, is high land, mostly covered with wood; to the southward they are very steep, having from 40 to 50 fathoms water very near them, where they ought not to be approached close; but toward the northernmost, there is from 23 to 30 fathoms, and here ships might occasionally anchor, particularly off the North end of this island, which lies in lat. 5° 50′ S. The Pigot anchored here in January, 1770, in 20 Zutphen Islands, and the neighbouring coast. Anchorage

* Capt. William Moffat of the Winchelsea, at this time, made an excellent survey of Rajah Bassa Road, and the soundings from thence to Hog Point.

fathoms mud and sand, Bantam Point bearing E. by S. ½ S., Fourth Point of Java S. ¼ E., West extreme of Thwart-the-way S. by E. ¼ E., North Island N. by E. ¼ E., Hog Island S. W., distant from a small island (that lies near the North extreme of the Zutphen) about 1 mile. The boat had regular soundings from the ship to the entrance of a river on the coast of Sumatra, which bore from her N. N. W.; she was launched over the bar, and they went about 1½ mile up the river, where Tangrea village stands, with rice fields about it, cattle, poultry, and plenty of cocoanuts. Here, it is thought, some bullocks and poultry may be procured for dollars, but Europeans landing on any part of the coast of Sumatra hereabout, must be always on their guard, for the natives are seldom to be trusted.

The Lascelles, in December, 1792, anchored in 15 fathoms, North Island bearing N. by E. ½ E., the outermost point of Hog Islands S. ¾ W., and the watering place S. W. by W. ¼ W., off shore 2 miles. The water they got here, although not brackish, was very soft, and fit only for culinary purposes.

Reef off Hout's Island, and dangerous current.

From the South Zutphen Island, called Houts, or Woody Island, there is a reef of rocks, distant about 2 cable's lengths, with 10 and 12 fathoms in the narrow gut between it and the island. On the 12th of February, 1815, the China fleet in passing these islands, found a current sweeping round them to the westward at the rate of 4½ miles per hour, with strong ripplings rushing in among the islands, which horsed some of the ships close to danger: the Bombay after dropping 2 anchors, was driven upon the reef off the South Zupthen Island, where she lay till the 12th, and after throwing part of her cargo overboard, all her guns, &c., with great exertions of the fleet, she was hove off the reef into the deep gut between it and the island, with great damage, which made it necessary to proceed to Bombay, where she underwent a complete repair. When aground on the reef, Stroom Rock bore S. 36½° E., Thwart-the-Way from S. 31° E., to S. 53½° E., Button E. 8° S., St. Nicholas Point East, North Island N. 10° E., islet off the northernmost Zutphen N. 6° E., and the S. E. point of Houts or Woody Island S. 31° W., being then on the inside of the reef of rocks, and 150 fathoms distant from the shore of Houts Island.

The Castle Huntly, brought up with 2 anchors in 14 fathoms rocks, about a cable's length N. 47° E. from the Bombay aground, with a reef off the N. E. end of Houts Island in one with the extreme of Long Island or North Zutphen bearing N. 37° W; from this dangerous situation, she got clear, by slipping one cable, and with springs on the other, cut it, and sheered out clear of the reef.

On account of the rapid currents, which are experienced near these islands at times, in the Westerly monsoon, ships ought not to approach them at the South and S E. parts nearer than 1½ or 1¼ mile, particularly in passing Houts Island.

Great channel at the entrance of Sunda Strait.

GREAT CHANNEL, to the northward of Prince's Island, at the West entrance of the Strait of Sunda, is separated into several passages, by 3 large islands situated betwixt Prince's Island and the land on the East side of Lampoon Bay. The southernmost of these channels is about 6 or 6½ leagues broad, formed between the North end of Prince's Island and Crockatoa; although destitute of soundings or anchorage, it is much frequented, being the widest passage into the strait, and is considered clear of danger.

A sunken rock was placed in some old charts, about 5 or 6 miles to the S. S. W. of Crockatoa, said to have been seen by Lieut. M'Cluer, and Capt. Drury of the navy is said to have examined it a few years ago, and found it to be a rock near the water's edge. There is, however, great cause to think there is no rock existing in this place, and that the channel is clear from the South end of Crockatoa to the North end of Princes Island.

Crockatoa.

CROCKATOA, or KRAKATOA, extending nearly N. W. and S. E., about 6 or 7 miles, and 4 or 5 miles in breadth, is a high island, steep to, on the South side, but a reef

of rocks projects a little way from the S. E. point.* Near the S. E. end of the island, is situated a conical peak in lat. 6° 8½′ S., lon. 105° 25½′ E., or 1° 26½′ West from Batavia by chronometers, bearing about N. E. by N. from the N. E. end of Princes Island, distant 7 or 7½ leagues. Several small islands lie contiguous to the West and northern sides of the principal island, of which Verlatens or Forsaken Island at the N. W. end, and Long Island at the N. E. end; are the largest. Geo. site of the Peak.

A bank of soft mud extends out from the East side of Crockatoa and Long Island about 3 miles, when the peak bears W. S. W. to S. W. by W., affording excellent shelter from westerly gales, by anchoring in from 20 to 23 fathoms about 1½ to 2½ miles off shore. The peak bearing S. W. by W. is the best birth, but do not anchor with the North end of the island to the southward of West, or you will be exposed to a heavy sea rolling in from the westward between Crockatoa and Pulo Bessy, during a westerly gale. The Princess Amelia, with the fleet from China, took shelter here on the 28th of December, 1815, where they remained till the 4th of January, 1816, during a continued gale from the westward, in very smooth water; while a Swedish ship was driven into Welcome Bay, and rode with 2 anchors down against a very heavy sea. On the N. E. end of Long Island, a swamp was found, with apparently a little rain water, as no spring was discovered: a very small spring of fresh water was found on Crockatoa, opposite to the South end of Long Island, but it could only be approached by boats at high water; directly abreast of Long Island, on the N. E. side of Crockatoa, a hot spring was observed, in which the thermometer rose to 154°. No inhabitants were seen on these islands, nor any trace of a village, and Capt. Balston of the Princess Amelia, thinks, no ship ought to depend on watering at Crockatoa. A wild hog was shot on Long Island, and there are also small deer on it. Anchorage.

The S. E. end of Crockatoa and East end of Long Island bear N. ¼ E. and S. ¼ W. of each other, forming a bay with a coral reef projecting ¾ of a mile, and a rock 2 feet under water, lies nearly a mile off the South end of Long Island. A reef extends half way across from the South end of Long Island toward Crockatoa, and although regular soundings of 28 to 32 fathoms were found in the channel between these islands, it is too narrow to be navigated by a large ship, and rendered more dangerous by eddy winds: the North end of this strait is fronted by a small island, and a reef of rocks nearly even with the water's edge, extends from the N. W. end of Long Island, above ½ a mile in a westerly direction toward the North end of Crockatoa.

PULO BESSY, or TAMARIND ISLAND, bearing about N. by E. from Crockatoa Peak, distant 3½ or 4 leagues, and nearly of the same size, has also a high peak resembling a sugar loaf, it being more acute than the former, situated in lat. 5° 57′ S., and 3 miles East of Crockatoa peak: some islets and rocks adjoin to the North end of the principal island, but it is bold to approach in most places, having 11 and 12 fathoms regular soundings close to the North and East sides, and 16 or 17 fathoms near the western part. Pulo Bessy.

The channel betwixt the South end of this island and those adjoining to the North end of Crockatoa, having regular soundings in it from 18 to 28 fathoms mud, and being about 2 leagues wide, where ships can occasionally anchor to stop tide, or otherwise, it is often pre- Channel between it and Crockatoa.

* As the Peak of Crockatoa may be considered the Fairway Mark in entering the strait of Sunda from the westward, its latitude ought to be correctly known, and although the latitude stated above, is thought to be very near the truth, it being the result of correct observations taken by Capt. Lestock Wilson, corresponding with those of several navigators; yet, other officers, esteemed careful observers, differ more in the latitude of this peak, than could have been expected, in a period of improved nautical astronomy. Capt. T. Lynn, made the Peak by observation in lat. 6° 12′ S. Captains Milliken Craig, and Bampton, made it in 6° 10′ S., and some Dutch charts place it in the same latitude. I made it in lat. 6° 9′ S., by indifferent observation. Capt. L. Wilson made it in lat. 6° 8′ 3″ S., Capt. Balston in 6° 9′ S., Capt. Denniston in 6° 7′ S., and Capt W. Owen of the Royal Navy, made it only in lat. 6° 3′ S., or 9 miles less than Capt. Lynn's observation, although these 2 officers are known to be careful observers, and good astronomers!

ferred to the channel betwixt the latter and Prince's Island, particularly by ships working out against the westerly monsoon. The only danger known in it, is the HINDOSTAN ROCK, on which the ship of this name struck in 1791; and it is of a spiral form, being only 6 or 8 feet in diameter, with 15 feet water on its summit, and 10 fathoms close to. About half way between it and the *bushy* S. E. point of Pulo Bessy, the depths are 8 and 10 fathoms, and it is distant from the South end of this island about 1½ mile. When upon the Hindostan Rock, Crockatoa Peak bore S. 15° W., the West extreme of Verlaten's Island S. 45° W, the East extreme of Long Island S. 2° W., Pulo Bessy from N. 44° E., to N. 2° W., the peak of Keyser's Island W. 12° N., and Zee Klip, or Gap Rock W. 5° N., well open to the southward of Keyser's Island.

Hindostan Rock.

Zee Klip.

ZEE KLIP,* is a small group, containing 2 or 3 steep pyramidal rocks, situated about 5 miles westward from the South end of Pulo Bessy, the largest of which having a cleft in it, is called sometimes Gap Rock.

To avoid the Hindostan Rock, and pass through the channel.

To avoid the Hindostan Rock, a ship ought to keep at least 2 miles from the South end of Pulo Bessy, but the best mark in proceeding through this channel, is never to bring the Gap Rock open to the southward of Keyser's Island. When the Gap Rock is in one with the South point of this island, it bears W. 12° N.; W. 15° N. when on with the centre; and W. 17° N. when in one with the North point.

The islands on the South side may be approached within 1½ or 2 miles, there being 23 fathoms mud about a ¼ of a mile from the North point of Long Island, and 15 fathoms sand within a ship's length of the beach; but a reef of rocks, above water, projects from the N. W. part of the island, ½ a mile or more to the W. N. Westward.

PULO SEBOOKO, or SAMBOORICO, in lat. 5° 53½′ S., lies to the N. N. E. of Pulo Bessy, leaving a safe channel nearly a league wide between them, and it is situated nearly midway between the latter and the S. E. point of Rajah Bassa Road: it is high, covered with wood, and some islets and rocks lie contiguous to the North and East sides, with good anchorage on the East side of the island, in 10 or 12 fathoms near the small islets. A reef projects a little way from the South end of the island, and also from the S. W. part, but on the North side there is 30 fathoms water between it and the Three Brothers, which passage seems to be safe, although not frequented.

Geo. site of Thwart-the-way,

THWART-THE-WAY, or Middle Island, called Pulo Renyang by the Malays, situated in the middle of the narrowest part of Sunda Strait, but rather nearer to Hog Point than to the Java shore, is of considerable size, being 4 miles long and moderately elevated; it lies about 7 leagues to the eastward of the islands last mentioned, the N. E. end being in lat. 5° 55½′ S., and 1° 1′ W. from Batavia by chronometers, or in lon. 105° 51′ E. A reef projects a little way from the South side of it, and the bottom is generally rocky near this island, with inconvenient depths for anchoring; there being from 40 to 60 fathoms about a league to the northward of it, but less water near its South and South West sides.

and the channel between it and Sumatra.

The channel between Thwart-the-way and Sumatra, is much frequented in the westerly monsoon, by ships from Banca Strait bound to the westward, being shorter, although more contracted than the other channel betwixt Thwart-the-way and Java. The northern channel may be adopted with a steady wind, for in such case, with the westerly current, a ship will get speedily through; but in light baffling winds, she is liable to be drifted about by strong tides or currents near the Stroom Rock, where there is no anchorage except in deep water from 40 to 60 fathoms.

* i. e. Sea Rock.

STROOM ROCK, situated about 1½ or 2 miles to the N. W. of Thwart-the-way is a group of 3 or 4 rocks, visible above the sea at high water, then discernible only at a short distance; at other times, it appears about the height of a long boat. Although the passage betwixt this rock and Thwart-the-way is safe, the channel to the northward is preferable, by keeping within 1½ mile of the Zutphen Islands when the wind inclines from the Sumatra side, and giving a birth to the Rock off Hog Point. The Stroom Rock, Button, and Bantam Point, are nearly in one, bearing E. 10° N.: when in one with the northern extreme of Thwart-the-way, it bears E. by S. ½ S., and when on with the S. Western extreme of that island, it bears S. E. by S. Stroom Rock, and how to avoid it.

There is said to be a Sunken Rock between Thwart-the-way and the Button, on which the ship Harrison struck; if such rock really exists, it must be very dangerous, for its true place is not yet known. The Dutch make it bear from the Button W. by N. ½ N., distant 1 league; by another account it lies 1 mile S. W. from the Button; by another about S. E. by S. 3 miles from the Button, having on it 15 feet water. This must be a mistake, for if such rock exists, it certainly lies to the N. Westward of the Button, but there is great reason to doubt its existence. Doubtful dangers.

## *SOUTH SIDE of SUNDA STRAIT, with SAILING DIRECTIONS to BATAVIA.*

PRINCE'S ISLAND, or PULO PONTANGH, separated from the West part of Java by a channel about 4 miles broad, is the largest island at the entrance of Sunda Strait, being of triangular form, 4 or 5 leagues in extent: the North end is in lat. 6° 27′ S., the peaked hill at the S. E. side, in lat. 6° 35′ S., lon. 105° 15′ E, or 1° 37′* West from Batavia, by my chronometers, and it is about 4 miles to the eastward of Java Head. The middle of the island is hilly, but in some parts, particularly at the West end, the land is level and low fronting the sea, and all the island abounds with wood. A reef projects from the West point, betwixt which and the South point of the island, an extensive bay called Casuaris Bay, stretches a great way inland, having soundings of various depths, and anchorage at its upper end; but being open to seaward, it is not frequented, consequently little known. The North side of the island has soundings from 20 to 12 or 10 fathoms near the shore, but the anchorage is destitute of shelter, and too near the land to lie in safety. With the peaked hill on the S. E. part bearing from S. W. to N. N. W., there is anchoring ground in 36 to 44 fathoms about a mile off the eastern shore; and with the same hill bearing from N. ½ W. to W. by N., there is from 10 to 30 fathoms coarse sand, shells and coral, little more than a cable's length off shore. The common anchorage is on the East side of the island, with the hill bearing about S. W. by W., and the northern extreme N. ½ E., in 38 fathoms fine sand, about ¾ mile off shore; but as this road is inconvenient for watering, the Peaked Hill may be brought to bear about N. W. by N., where a ship in want of water should anchor in 35 fathoms soft ground, about ½ a mile from the shore. Here, is a small sandy bay, and at its eastern part, a run of fresh water, where the casks must be filled about 100 yards up, (the higher the better) otherwise the water will be brackish. It is only during the westerly monsoon that ships can conveniently procure water here, for the springs are nearly dry in the S. E. monsoon, when there is little rain; the strong winds also, which blow in this season Geo. site of Prince's Island; Anchorage,

* Captain L. Wilson made the Peak 1° 38¾′ West from Batavia by chronometers, or 1¼ mile more than stated above.

over the West part of Java, render the anchorage at the East end of Princes Island unpleasant, it being then a lee shore.

and adjoining dangers. From the N. E. end of the island, a reef extends along the shore on each side; some rocks and breakers also lie at the S. E. side of it, in a bay to the S. Westward of the peaked hill; but the rocks called the CARPENTERS, are most in the way of ships that pass betwixt Java and Prince's Island. These are a group of large rocks projecting from the South point of the island nearly a mile, having no anchorage near them, there being 50 fathoms close to, and about 2 ships lengths from them no ground.

Prince's Strait. PRINCE'S STRAIT, the BEHOUDEN, or Safe Passage of the Dutch, formed between Prince's Island and Java, is the small or southern channel leading into Sunda Strait; it was formerly much frequented, and recommended as the best passage, both to enter and depart from that strait, and it is still chosen by many ships; now, however, the preference is generally given to the great channel betwixt Prince's Island and Crockatoa, or to that between the latter and Tamarind Island, with a steady fair wind, unless a ship intend to water at Mew Bay, which is more convenient than Prince's Island for that purpose.

First Point. FIRST POINT of Java, or TANJONG ALONG-AJANG, is the South point of the entrance of Prince's Strait, easily known by a remarkable rock off it called the FRIAR, which lies nearly S. E. by S. about 5 miles from the Carpenters, that bound the other side of the strait. The West end of Java extends about 4 leagues nearly North and South, steep high land, projecting a little in the middle, and this part is generally considered as Java Head, already mentioned in the First Volume of this work. The First Point is in lat. 6° 44′ S., distant near 2 leagues to the northward of the Head, and the coast between them which forms a bight, is fronted by high rocks in some places, stretching out about a mile. On these rocks, also on the Friar, and Carpenters, the sea breaks high during westerly winds, or in bad weather.

Directions. Ships proceeding through Prince's Strait, in the N. W. monsoon, should keep near to Prince's Island and the Carpenters, particularly in working out against westerly winds; a current will then, generally be found setting out in their favor. During the other monsoon, when S. E. and southerly winds prevail, they ought to keep nearest to the Java shore, and the Friar; which rock may be approached within 1 or 2 cable's lengths.

Ships may sometimes get quickly out to the westward through Prince's Strait, in the N. W. monsoon, during squally weather, when it would be difficult to beat out to the northward of Prince's Island. Capt. John Cowman, in the Magdalen, beat out through this strait against a westerly gale, by carrying a press of sail, and tacking between the squalls, at a time when the heavy sea made it impossible to tack the ship in the Great Channel between Crockatoa and Prince's Island; notwithstanding, he was only 36 hours from North Island until clear out of the strait, while other ships from China, anchored for shelter under Crockatoa. The Elphinstone, of 1200 tons burthen, Capt. Milliken Craig, bound to China, entered Prince's Strait in the afternoon of the 3d of August, and passed through it in the night without anchoring.

Mew Island. MEW ISLAND, in lat. 6° 43′ S., called also CANTAF, situated in Mew Bay, about a league eastward of the First Point of Java, is small and hilly, abounding with wood: betwixt it and the First Point, there is an islet near the Java shore, and regular soundings over a sandy bottom are found to stretch along this side of Prince's Strait. There is a safe, but narrow channel betwixt Mew Island and Java, with various soundings from 5 to 8 and 10 fathoms, in mid channel, over a sandy bottom, where a ship may lie land locked and be sheltered from all winds. From the body of the island South, but nearest to the Java shore, there is a rocky shoal, which is avoided by keeping nearest to the island; in every other

part, mid channel is the best track for vessels passing through, or taking shelter here. The shore is rocky on the outside of Mew Island, but safe to approach, the soundings decreasing gradually to 8 or 9 fathoms. On the Java shore to the eastward of the island, there is an excellent watering place, during the southerly monsoon, being then preferable, to that at Prince's Island, where the water is sometimes scarce, and the wind blowing upon the shore: whereas, the water pours from the rocks here in great abundance, of superior quality to that of Anger, North Island, or the Nanka Islands. Watering Place.

A ship proceeding to the watering place at Mew Island, must give a birth to a reef of rocks, which bears about N. by W. nearly ½ mile from the watering place. She may run betwixt it and the island, borrowing toward the latter, and anchor in 10 or 12 fathoms inside, in the channel formed between the island and Java; or she may anchor farther out in 14 fathoms water, over a bottom of fine sand, with the peak on Prince's Island N. 13° W., the extremity of Mew Island W. 8° S., distant from the Java shore about 1¼ mile, and from the watering place 1½ mile. The Royal George at anchor in 18 fathoms, had Prince's Peak bearing N. 15° W., North extreme of Prince's Island N. 2° W., North extreme of Java N. 42° E., Southern extreme of the Carpenters N. 70° W., Mew Island from S. 15° W. to S. 88° W., distant ½ a mile, and the Watering Place S. 21° E., distant 1¼ mile. This ship and the Thames, watered here, on the 26th of March, 1813. H. M. S. Grampus, with the fleet from China, also watered here on the 1st of May, 1811. Anchorage.

Mew Island is not inhabited, but ships touching there, sometimes procure a small supply of turtle, fowls, and cocoa-nuts, at an exorbitant price, from the people of Prince's Island, who bring them over in their proas. Plenty of wood may be got upon the island, or on the opposite shore of Java, near the watering place. The water is clear and good, and falls in a cascade from the land, upon the beach; with the assistance of a hose, it may be filled into boats without landing the casks. Inland, a considerable way from the watering place, there are some huts or villages, but none contiguous to the sea on this part of the coast.

SECOND POINT, or TANJONG GOOKOOLANG, in about lat. 6° 36′ S., and 3 leagues N. Eastward from Mew Island, may be approached to 15 or 16 fathoms, about 1½ or 2 miles distance; and a ship may keep in moderate depths for anchoring, in passing along the coast between them, there being no danger unless very near the shore. On the East side of the point, lies Welcome Bay, extending a great way into the land, and containing several islets and shoals; the outermost of these shoals, extends E. N. E. and W. S. W. about 2 cable's lengths, and is half that breadth, having only 9 feet water on it in some places. From this shoal, the Second Point is said to bear W. N. W. about 5 miles, then on with the northernmost peak of Prince's Island, and the Third Point N. E. ½ E. About a cable's length outside of it, there is 19 fathoms water, so that care is required not to stand into the bay, in working, when near this shoal; and with a fair wind, a direct course should be steered from the one point to the other, without borrowing into the bay. The eastern side is more clear, with good shelter in the S. Easterly monsoon, but in the westerly monsoon this bay ought to be avoided. Second Point, and adjacent coast; with sailing directions.

THIRD POINT, or TANJONG LUSSONG, in lat. 6° 27′ S., separates Welcome Bay from Pepper Bay, the latter being situated on the East side of this point, and it bears nearly N. E. by E. ½ E., 5 or 6 leagues from the Second Point. To the eastward of the point, there is an islet inside of Pepper Bay, with a shoal to the North westward, rendering the approach to it dangerous; which is the case throughout this bay, the water being generally shoal. A ship being abreast of the Third Point, about a league distant, the small island Seriguy or Pulo Papale, at the N. E. part of Pepper Bay, may be seen bearing about E. by N., but will then be confounded with the contiguous coast; if she is to touch there, it will be prudent to steer across the bay, keeping the island on the starboard bow, and not to the Third Point.

Anchorage at Seriguy.

borrow toward the shoal water near the Java shore. She may anchor about 2 or 3 miles from Seriguy in 7 or 8 fathoms, with it bearing about S. S. E., where refreshments may be procured from the village on the main; but at high prices. A reef projects from the island about a mile to the northward, and it stretches from thence to the Java shore.

Fourth Point, to sail clear of the dangers.

FOURTH POINT, or TANJONG CIECORANG, situated about 4½ leagues N. by E. from Seriguy, is low to seaward, and most part of the coast betwixt it and Welcome Bay is low, interspersed with hills in some places, and abounding with cocoa-nuts. In coasting along betwixt Seriguy and the Fourth Point, a ship should keep about 3 miles or more from the shore, in soundings from 20 to 30 fathoms, that she may be enabled to anchor, if calms and contrary currents render that necessary. About half way from Seriguy toward the point, it would be imprudent to borrow too near the shore, for reefs stretch out nearly a mile in some places: and from the Fourth Point, a reef projects about a mile, with 20 fathoms very near it. Near the same point, there is said to be a reef of rocks adjoining to the shore, and a sand bank stretching off from the reef about ½ a mile, on which the Catherine was lost.* From the outside of it in 12 fathoms water, the Button bears N. N. E. ½ E., Thwart-the-way N. ½ E., Crockatoa West, and the nearest part of the Java shore S. E. by E., about 2 or 2½ miles.

To sail from the Second Point to the Fourth Point.

If a ship having entered by Prince's Strait, is abreast of the Second Point, she ought to steer a direct course for the Fourth Point, bearing nearly N. E. from the former, distant about 13 leagues; or having entered by the great channel, to the northward of Prince's Island, a course should be steered for the same point, if she intend to stop at Anger Road, or is bound to Batavia: for it will be prudent to keep near the Java coast during the southerly monsoon, and pass betwixt it and Thwart-the-way, whether bound to Batavia or Banca Strait. From the Second Point to the Fourth Point, there is generally good ground for anchoring occasionally, in 18 to 25 or 30 fathoms.

Geo. site of Anger,

ANGER, or ANJERE VILLAGE, in lat. 6° 3½′ S., lon. 105° 54′ E., about 2 leagues eastward of the Fourth Point, is not easily perceived in coming from the westward; being situated in a bay, where the houses or huts are scattered amongst the cocoa-nut trees, it is nearly obscured by them, and by the chain of high hills inland. The easternmost of these is a sharp peaked hill, called Anger Peak, directly over the village, and is on with it bearing S. S. E.; from the S. W. point of Thwart-the-way, the village bears S. E., and from the eastern extreme of the same island, it bears S. 30° E. Ships frequently touch at this place in the southerly monsoon, to procure refreshments; but the road is not considered safe nor convenient, in the opposite season, for it is *then* dangerous landing on account of the high surf. Buffalos, some hogs, poultry, vegetables, and frequently turtles, may be procured here; water may be had by employing the shore boats, or ships may water with their own boats, when the weather is favorable. The common anchorage in Anger Road, is in from 9 to 14 fathoms, abreast of the village. The Raymond in 9 fathoms, had the Flagstaff bearing S. by E. about ¾ of a mile. The Ceres, on the 28th of June, 1802, anchored in 13 fathoms about ¾ mile from the shore, with the Flagstaff bearing S. 37° E., Thwart-the-way from N. 28° W. to N. 43° W., the Button N. 7° E., the Cap N. 20° E., and the N. E. extreme of Java N. 32° E.

anchorage.

Betwixt the Fourth Point and Anger Road, the soundings are irregular and the coast steep,

* By this ship's journal, it appears, that she struck on a sunken rock about 2 miles off the shore at the Fourth Point, between 11 and 12 A. M., on the 20th September, 1716, where she bilged, but floated off, and was run on shore to save the Treasure, and part of the cargo. Capt. Hunter, of the Catherine, went with the Treasure in the long boat to Batavia, and the governor gave every assistance, by sending sloops to take out the cargo, which was carried to Edam Island. The Javians afterward, burnt the hull of the ship to procure the iron.

the depths from 30 to 35 fathoms about 3 miles off, decreasing to 8 and 10 fathoms about ½ a mile from the shores of Anger Bay.

CAP, or SMALL CAP, called Pulo Oolar, or Snake Island by the Malays, is a little round isle, bearing N. N. E. from Anger Village about 4 or 5 miles, and nearly E. S. E. from the South part of Thwart-the-way; between it and the latter island is the channel, having various depths in it from 20 to 50 fathoms, over an uneven, and generally rocky bottom. There is a passage betwixt the Cap and the Java shore, but ships proceed not through it, on account of Brouwer's Sand, bounding it to the eastward. Cap.

BUTTON, or GREAT CAP, situated in lat. 5° 53′ S., and 2 leagues North from the Small Cap, of similar appearance, but larger and higher, is steep and covered with small trees. From Anger Road, nearly to St. Nicholas Point, there is anchorage in 20 to 16 fathoms by borrowing toward the Java shore; but outside, the depths are great, and the bottom unfavorable for that purpose, where ships are liable to be drifted about by the strong tides, if the wind fail them, for the tide runs through this narrow part of the strait, with great velocity during the springs. Betwixt Thwart-the-way, and the Java shore, and off the Button, the tides or currents, set generally strong through the strait to the S. Westward in the south-east monsoon; and in the opposite direction, during the westerly monsoon. Button. Tides.

Ships seldom pass betwixt the Button and Thwart-the-way, on account of the rock already mentioned under the description of the latter island, the proper channel being inside of the Button, betwixt it and the Java shore.

BROUWERS SAND, bounds this channel on the inside, and stretches a considerable way parallel to the coast of Java, having an islet and a small passage between it and the shore; it is a dangerous shoal, steep to seaward, there being deep water very near it on the outside. When the Harrison's boat was on it in 1½ and 2 fathoms water, the Cap bore S. W. ½ S., Thwart-the-way W. by N., the Button N. W. ½ N., the point of an island near the shore, (supposed Pulo Merak) which shut in Bantam Point, N. by E., and an isle close in shore, (or Little Pulo Merak) E. N. E. To avoid this shoal, a ship should keep nearly mid-channel between the Button and the Java shore, taking care not to bring the Cap in a line with the point on the West side of Anger Bay, generally called Anger Point, or Fourth Point. Brouwers Sand.

PULO MERAK, KETCHEEL, (Little Pulo Merak) lies near the shore inside of the Brouwers Sand, and Pulo Merak Besar, (Great Pulo Merak) to the northward of it: between this island and the main, Merak Harbour is formed, having 6, 8, and 9 fathoms water in it, being about a ¼ mile in extent, which was surveyed by Capt. Rayley in H. M. Sloop Baracouta, in September, 1812, and seems to afford good shelter for small ships. Pulo Merak.

BANTAM, or ST. NICHOLAS POINT, in lat. 5° 52′ S., lon. 106° 2′ E., or 50 miles West from Batavia by chronometers, is a high bold headland, and bears from the Button E. 9° N., distant 7 miles. Close to the shore, on each side of it, there are some small islands, Pulo Tampasa to the S. W., and Pulo Saleyra in the bay on the East side: the soundings off this part of the coast are mostly regular, and ships may anchor in some places, in 20 fathoms clay or sand, about 2 or 3 miles from the point; but it appears that the depths do not decrease regularly close to this point, for the Scaleby Castle had 38 fathoms hard bottom, with it bearing South, distant 1 mile, where 18 fathoms is marked in some charts, and even 12 fathoms in the Dutch charts. Geo. site of Bantam Point.

The coast between it and Anger, is high, with indifferent anchorage in the channel until Bantam Point is approached; but there are spots between it and the Button, where a ship

may occasionally anchor to stop tide, particularly toward the Java shore, where the depths decrease in *most* places.*

Pangoriang. PANGORIANG, a small place about 4 miles to the East of St. Nicholas Point, has a small rivulet of good water and convenient anchorage, where ships may easily procure a supply of that article, and other refreshments may be got at times: this place is frequented by H. M. ships, and the anchorage is in from 10 to 16 fathoms. On the 7th of December, 1812, Capt. Owen, in H. M. S. Cornelia, anchored in 13 fathoms mud, with Ejow, or Rajah Bassa Peak bearing W. 10° N., St. Nicholas Point W. 2° N., Pulo Saleyra or Roben Island W. 3° S., Goonong Laoo, or highest hill near the ship S. 18° W., Pulo Kaly S. 26° E. to S. 45° E., Great Pulo Mady S. 64° E., Pulo Pontangh S. 68° E., centre of Pulo Baby N. 72° E., and the watering place S. 33° W., off shore about $1\frac{1}{4}$ mile.

Pulo Kaly are 2 small islands, having a passage of 4 fathoms within them, affording good shelter for small vessels; they lie about half way between Pangoriang and the Red arid bluff extreme, that forms the West side of Bantam Bay; from whence, all the shore is rocky to the sandy bay of Saleyra, situated on the S. E. side of St. Nicholas Point. Pulo Saleyra, fronting this bay, is low and woody with a sandy beach, having 2 fathoms water inside of it, and 22 fathoms near it on the outside.

To sail from Anger to the eastward. A ship sailing from Anger Road, or being abreast of it, should steer to pass outside of the Cap, and inside of the Button, at any discretional distance from either, taking care not to borrow too close to the Brouwer's Sand in passing; when clear of that shoal, and the Button, she may steer N. N. Eastward for the Two Brothers, if bound to Banca Strait; or to pass Bantam Point within 2 or 3 miles, if bound to Batavia, or Bantam.

Tides. THE TIDES, in the narrow part of Sunda Strait, seem to be greatly influenced by the winds; and frequently resemble currents more than regular tides. In Anger Road, the ebb tide sets often from 1 to 2 miles per hour to the westward during the S. E. monsoon; continuing to run sometimes about 14 hours at a time, with a slack or flood, of 6 hours. Off Thwart-the-way and the Button, in the same season, it often runs 14 hours at a time to the S. Westward, from 2 to $3\frac{1}{2}$ miles per hour; then changes and sets to N. W. and northward, with much less velocity. At other times, the ebb sets about 6 hours to S. W., and the flood 6 hours to the N. E., with nearly equal velocity, about 3 or $3\frac{1}{2}$ miles per hour, when strongest on the springs, which we experienced in the Anna, in July and August.

During the westerly monsoon, betwixt Java and Thwart-the-way, the tide has also been found to run 3 and $3\frac{1}{2}$ miles per hour when at its greatest velocity, the ebb 6 hours to the S. Westward, and the flood the same length of time to the N. E.; but during strong gales from the westward, the flood frequently runs longest into the strait. In this season, the tide or current on the opposite side of the strait, slants off from the Sumatra coast about the Zutphen Islands, toward the middle of the strait, or the Java shore: and from December to February, the ebb tide along the Sumatra coast between North Island and Hog Point, has been experienced to run generally to the southward from 4 o'clock in the morning until 6 in the evening, and the flood weakly to the northward during the night. In February and March, a rapid current of 4 to $4\frac{1}{2}$ knots per hour, sets sometimes in among the Zutphen Islands to the W. S. Westward, or round them toward Hog Point, which requires great caution in ships passing those islands, or between Hog Point and the Stroom Rock.

Bantam Bay. BANTAM BAY, about $2\frac{1}{2}$ leagues S. Eastward from St. Nicholas Point, is extensive, and contains several islands; of which, Pulo Panjang, a long flat island, covered with trees,

* With the Button bearing W. $\frac{1}{4}$ N. 2 miles, we anchored in the Anna in 28 fathoms, to stop tide during the night, and had 20 fathoms nearer to the Java shore. At another time, we anchored in the night in 37 fathoms, with the Button bearing S. by W. $\frac{1}{2}$ W., but here the ground was hard.

in the West part of the entrance, is the largest. A ship may pass on either side of this island, if bound to the anchorage at Bantam, but the eastern channel between it and Great Pulo Mady is to be preferred, having 8 or 9 fathoms water, and is much wider than the western channel; this is formed between the point that bounds the West side of the bay, and the West end of Pulo Panjang, and the depths in it are 6 and 7 fathoms. Should a ship pass through this channel, she must give a birth to a reef that projects from the South side of Pulo Panjang, and others which extend from the small islands in the western part of the bay.. When a ship enters by the channel to the eastward of Pulo Panjang, Bantam Hill (of round form) will be seen, which is on with the town bearing S. S. W., and when the flagstaff of Bantam bears S. S. W., it is open a little to the westward of Little Pulo Mady: with either of these marks on, she may steer for the town, passing on the West side of Great and Little Pulo Mady, and anchor off the town in 5 or 6 fathoms mud. There is a passage to the eastward of these islands, but the channel betwixt them and Pulo Panjang has the deepest water. Pontangh Point is bluff, and forms the East side of Bantam Bay, from which a reef projects a great way to seaward, with a regular decrease of depth toward its outer edges. The perpendicular rise and fall of tide is 5 or 6 feet in Bantam Bay, and along this part of the coast.

To sail to the anchorage.

PULO BABY, extends about 4 miles nearly East and West; its West end is in lat. 5° 48′ S., and bears from St. Nicholas Point E. 19° N., distant 13 miles. This island is woody and bold to approach, excepting the East end, from which projects a reef. About 5 leagues nearly East from it, lies the westernmost island of the group called Hoorn's Islands; this is the largest of the group, also called Pulo Tidong, or Wapen Island, the West end of which bears about N. ½ W. from Maneaters Island, distant 4 leagues; and to the S. Eastward of these, the Great and Little Cambuys are situated. Pulo Baby, and these islands, with their adjoining shoals, bound the North side of the passage leading to Batavia; and the shoals which stretch along the Java shore, from that off the East point of Bantam Bay, to that projecting from Maneater's Point, bound the opposite side of the passage. The coast of Java, in this space, is low near the sea.

Pulo Baby, and islands to the eastward.

Maneater's Island, situated near the N. W. end of the shoal of that name, which extends a great way out from Java, is level and low, and bears from the West end of Pulo Baby E. 29° S., distant about 7 leagues, and 5 or 6 miles W. S. W. from the Great Cambuys. There is a conspicuous tree on the latter, and both it and the Little Cambuys are moderately elevated.

A SHIP bound to BATAVIA, being abreast of St. Nicholas Point, about 3 miles distance, ought, with a fair wind, to steer about E. by S., to pass mid-channel between Pulo Baby and the shoal projecting from the East point of Bantam Bay; and the same course continued, will carry her in the fair channel toward Maneater's Island, if not affected by an oblique tide, which generally sets nearly East and West along this part of the coast: but if the wind is off the land, a course a little more southerly may be requisite. The best track is to keep in 14 and 15 fathoms when a ship is under sail during the night, taking care not to borrow under 12 fathoms toward the Java shore, nor to deepen above 18 fathoms in the offing. For strangers to run in the night, it may sometimes be imprudent, but they can never be at a loss for anchorage, after reaching St. Nicholas Point, there being moderate depths for that purpose, from hence to Batavia.

To sail from St. Nicholas Point toward Batavia.

When the Great Cambuys is approached, the channel becomes contracted, and bounded by shoals, which ought to be passed only in day-light: 1 of these has 16 feet water on it, and is about the size of a ship; the West end of Pulo Tidong bears from it N. ½ E., and the East end N. N. E. ½ E., Great Cambuys E. S. E. Southerly, and Maneater's Island S. E. ½

E. There are various channels amongst the islands from hence to Batavia, but that adjoining to the coast of Java, is generally considered the best, and is most frequented.

by the outer channel.

OUTER CHANNEL, is on the North side of the Great and Little Cambuys, and a ship intending to adopt it, should keep within a mile of the great one, to avoid the shoals to the northward, nor ought she to approach the East end of the same island under ½ a mile, for a spit projects from it. After passing these islands, she must edge to the southward until they are on with each other, then steer about E. N. E. for the small island called Pulo Dapour, or Duffen's Island, keeping it a little on the starboard bow. By steering toward it, she will pass betwixt 2 shoals, separated about 1½ mile from each other, on which beacons have sometimes been placed; it will, however, be prudent to keep a boat a-head sounding, if unacquainted, for few of the shoals have beacons; the depths in this track are generally about 12, 13, and 14 fathoms. Having passed Pulo Dapour on the South side, she must steer to the E. S. Eastward for Edam, to enter Batavia Road by the great channel, leaving Edam and Enkhuysen to the eastward, and Haerlem and Hoorn Islands to the westward. When Edam Island is approached, the depths will be 10 or 11 fathoms, and a course about South should then be steered, to pass betwixt Hoorn and Enkhuysen; when clear of these islands, the dome of Batavia church may be brought to bear S. ¼ E., and this bearing continued, will carry a ship betwixt the Rynland Shoal and Eastern Reef, directly to the road, among the shipping.

Ships do not always pass to the northward of the Cambuys, when proceeding to Batavia Road by the great channel, for some ships pass to the southward of them, then steer to the eastward on the North sides of Middleburgh, Amsterdam, and Haerlem; the shoals that lie contiguous to this track are near the North side of Middleburgh, and to the N. Westward of that island; in passing which, a boat should be kept a-head to sound, by those who are strangers to the channels.

Betwixt the Great and Little Cambuys there is a safe passage, through which we came in the Atlas; having in running from Pulo Baby with the land-wind in the night, got too far from the Java shore, in soundings from 18 to 22 fathoms; we stood along the North side of Great Cambuys in the morning, kept nearest to the little 1 in passing between them, and had never less than 10 fathoms. We did not see the 3 fathoms shoal placed in some charts, nearly midway between these islands.

To sail to Batavia by the Inner Channel;

INNER CHANNEL, leading to Batavia is generally called the DUTCH CHANNEL, being constantly used by their ships; and with proper care, it may be considered very safe.

contiguous islands and shoals.

To proceed through this channel, a ship should pass between Maneater's Island and the Great Cambuys, which can only be done with safety in day-light, on account of the shoals stretching from these islands. Maneater's Shoal projects about a mile to the N. W. and northward of the island, and 1½ mile to the N. Eastward, where the water shoals on the edge of it from 9 to 5 fathoms at a cast of the lead; and on this part of it, there is sometimes a beacon, which is in one with the South point of the island bearing W. ¼ S. Opposite to the extremity of Maneater's Shoal, the passage is bounded on the outside by a reef that projects a considerable way to the westward from the West end of Great Cambuys. A beacon is sometimes seen upon this reef, and another on a shoal a little detached from it to the westward; at other times, they are destitute of beacons. It is proper to mention, that all ships proceeding through any of the channels toward Batavia, must be careful to avoid the shoals, for many which are marked in the *old* charts with beacons, have none upon them. The beacons are stolen at times by predatory fishermen, at other times, washed away by the sea during the N. W. monsoon, and not replaced for a great length of time, or probably in

some cases, not at all. They are not conspicuous, consisting only of a single tree, with a small piece of wood in the form of a cross, nailed on some of them.

The depths are 9 and 10 fathoms in the passage between Maneater's Shoal and the reef off Great Cambuys, and the best track, if no beacons are seen, is to borrow nearer to the former island than to the latter. When past Maneater's Island, a direct course should be steered to pass to the southward of Middleburgh Island, bearing from it about E. $\frac{3}{4}$ S., 4 or $4\frac{1}{2}$ leagues; the coast betwixt them forms a bight which is safe to approach, the soundings decreasing regularly toward the Java shore; and nearly in the middle of the bight, there is a place of some trade, called Songy Lampoon. From 9 to 10 fathoms, are the common depths in passing through this part of the channel.

Ontong Java Point, bounding the East side of the bight, is a sloping headland, covered with trees, and surrounded by an extensive shoal or sand bank, called Ontong Java Reef, which extends a great way out toward the opposite Islands. On the northern extremity of the reef, there is a small beacon with a piece of wood sometimes nailed to it in the form of a cross, betwixt which and the Island Middleburgh is the channel, about $\frac{1}{2}$ a mile broad, with regular soundings in it from 8 to 10 fathoms. On the other side of this channel, there is sometimes a beacon placed near the S. E. point of Middleburgh, on a spit projecting a very little way from that point, but too close to be considered dangerous.

Nearly West from Middleburgh, there are some shoal patches that bound the North side of the channel, 1 of which is distant $1\frac{1}{2}$ mile from the island, bearing West from it; these patches are generally destitute of beacons, but there is often a buoy upon the Mynderk Shoal, which lies about 2 miles W. by N. from the West end of Middleburgh Island.

To avoid these shoals, a ship ought to keep the Flagstaff of Middleburgh, or the South part of that island, at least 3° to the northward of East, until the beacon is seen on the point of Ontong Java Reef; she may then steer to pass midway between it and Middleburgh. At low water, the sea may be sometimes seen to break on Ontong Java Reef, close inside of the beacon, it being steep to, there, and on the West side; but on the eastern edge of it, opposite to Schiedam, and Onrust, the water shoals regularly. Having passed between the Islands Middleburgh and Amsterdam on one side, and Ontong Java Reef on the other, a ship should steer to the southward for the Islands Schiedam and Onrust; when abreast of Schiedam, she must borrow toward Ontong Java Reef, and run to the southward along the edge of it in 5 fathoms, until the passage between Onrust and Kuyper's Island is fairly open, in order to avoid a Rock or Knowl nearly in mid-channel, on which many ships have grounded. This knowl is small, with only $2\frac{1}{2}$ fathoms on its shoalest part; $5\frac{1}{4}$ and $5\frac{1}{2}$ fathoms close to it on the West side; and 6 or 7 fathoms between it and Onrust. There is frequently a buoy upon it, which is sometimes sunk, or taken away.

When upon the knowl, the piles of Onrust are on with the White House of Kuyper's Island; when the piles are open a little with it either way, the knowl is avoided.

There seem to be other shoal spots to the northward of this knowl, or between it and Onrust, by the account of Capt. Neish, of the Auspicious, which ship grounded on 1 of them, the 26th of March, 1816, on her passage from Batavia toward England, with Onrust and Kuyper's Island in one; extremes of the former from S. S. E. $\frac{1}{4}$ E. to S. by W. $\frac{1}{2}$ W., and Ontong Java Point W. by N. $\frac{1}{4}$ N. When aground had 5 fathoms at the stern, and 3 fathoms at the fore-chains, apparently a soft coral rock of small extent, as the Ganges drawing more water, and sailing right a-head of the Auspicious at the time, passed clear of it. Hove off with the stream anchor, and touched the ground lightly twice after, by which Capt. Neish infers, that the passage between the knowl and Onrust is not safe for large ships, and that the only safe channel is to the westward between the knowl and Ontong Java Reef.

As the depth decreases gradually on the edge of the flats to the eastward of Ontong Java Point, this is the safe side of the channel when abreast of Schiedam, and a ship may borrow to $4\frac{1}{2}$ or 5 fathoms; at all events, she must not deepen above 5 fathoms in passing the knowl

to the N. Westward of Onrust, or until the passage between it and Kuyper's Island is fairly open; being then clear of the knowl, she must haul over for Kuyper's Island, and pass near it on the S. W. side; a beacon will then most probably be perceived, standing on a shoal toward the Java shore, which must be left to the southward in passing.

Purmerant Island, situated to the eastward of Kuyper's Island, has an extensive rocky reef projecting from it nearly 1½ mile to the eastward, and about ½ a mile to the southward; on the eastern part of this reef there is sometimes a beacon, and formerly there was 1 on the South end; the sea breaks on some parts of it at low water, or when there is much swell.

When a ship has rounded Kuyper's Island, and no beacons are perceived on Purmerant Reef, or on the shoal adjacent to the main, she ought to steer a direct course for the outer part of the shipping in Batavia road, bearing about S. 54° E. from Kuyper's Island, distant 2 leagues. In passing along, several beacons will probably be discerned on shoal spots toward the Java shore, all of which must be left to the southward; and the depths will generally be from 7 to 5 fathoms, in the fair track. When the road is approached within 3 miles, a beacon to the eastward may probably be discerned on the Rynland Shoal; this bears from Kuyper's Island E. S. E. ½ S., and from the shipping in the road about N. by W., not far distant, which may be left to the northward in standing into the road; and here, a ship should anchor in 4, 5, or 6 fathoms, at discretion, off shore about 2 miles, with the dome of the church from South to S. by W.

To sail into Batavia Road by the Middle Channel.

MIDDLE CHANNEL, through which we passed *three times*, in the Anna, is also very safe, and with some winds, preferable to the Inner Channel. To sail into Batavia Road by it, a ship must pass to the southward of the Islands Middleburgh and Amsterdam, betwixt them and Ontong Java Reef, as already directed; having passed the latter island, instead of hauling to the southward for the Inner Channel between the islands and the main, she must steer directly eastward for the small Island Haerlem, leaving Schiedam to the southward. When Haerlem is approached, she must edge away to the S. E., betwixt it and Rotterdam, and betwixt the latter and Hoorn; keeping nearest to Hoorn, on account of a reef that projects from the Island Rotterdam a small distance to the S. Eastward. Having rounded the S. W. point of Hoorn Island pretty close, it is prudent to steer S. Eastward until the dome of Batavia church is brought to bear S. ½ E. or S. ¼ E., to give a good birth to Purmerant Reef, already mentioned, which projects a great way eastward from the island of that name, and bears about N. by W. ½ W. from Batavia church.

After passing the Island Hoorn, and having brought the dome to bear between S. ½ E. and South, she may steer direct for it, with either of these bearings, until she anchor in the road; by keeping the dome of Batavia church S. ¼ E., she will pass midway between the Rynland Shoal and Eastern Reef. The soundings throughout this channel, after passing Amsterdam Island, are generally 9, 10, and 11 fathoms, until the depths decrease regularly near the road.

The eastern channels.

EASTERN CHANNELS, leading to or from Batavia Road, are also safe and convenient. We passed through that formed between Edam, the outermost island, and Alkmaar, the next island to the southward, in regular soundings, 9, 10, and 11 fathoms; and at 2 other times, we passed in the Anna, through the Leyden Channel, leaving the island of that name to the southward, and Alkmaar and Enkhuysen Islands to the northward, in 10 and 11 fathoms regular soundings. The channel between Leyden and the coast of Java is not frequented by large ships, but is considered safe, if a ship keep near the island, to avoid the reefs between it and the main. One of these about midway between Leyden and the Java shore, is delineated on the plans of Batavia Road, as an island of considerable size, with trees on it, called Vader Smith; no such island has existed these last 30 years, there being only a reef under water in the situation assigned to it. To clear Vader Smith's Shoal a large

white house with a red top bearing S. S. W., will carry a ship into 7 or 8 fathoms in the road.

The shoals nearest to Batavia Road, and most in the way of ships approaching it from the northward, are the Rynland Shoal, and Eastern Reef; the latter may be considered as the western extremity of that called Vader Smith, or is separated from it only by a very small channel. Shoals adjacent to the Road of Batavia.

The Eastern Reef is composed of rocks and sand, partly dry at low water spring tides, but there is no break upon it at high water, when the sea is smooth. On the West end of this reef there is generally a beacon, which is discernible from Batavia Road, and bears N. E. $\frac{1}{4}$ N. when in one with the body of Leyden Island. All ships pass to the westward of this beacon, there being no safe channel to the eastward of it, for a large vessel.

The Rynland Shoal is rocky, with only 10 feet water on it; and is of round form, about the length of a large ship in diameter. It bears N. by W. from the shipping in the road, distant about a mile, and bears also N. by W., or N. $\frac{3}{4}$ W. from Batavia church; although directly fronting the road, it is at times destitute of a beacon, which was the case *twice* when we were at Batavia in the Anna. In 1793, a floating beacon framed of several pieces of timber, was placed on this shoal, which was more conspicuous than any of the other beacons. Ships generally pass inside of the Rynland Shoal, when they sail through the Inner, or Onrust Channel; but ships sailing to, or from the road by any of the northern channels, mostly pass between it and the Eastern Reef beacon, which passage is safe, with the dome of Batavia church bearing from South to S. $\frac{1}{2}$ E.; or this may be kept S. $\frac{1}{4}$ E., which is the best bearing for sailing to, or from the road, betwixt these shoals; this has been already mentioned, in the directions for approaching Batavia by the outer, and middle channels.

BATAVIA OBSERVATORY, in lat 6° 9′ S., lon. 106° 51$\frac{3}{4}$′ E., by astronomical observations made by Johan Mauritz Mohr, and this longitude is considered to be very correct.* Here, a ship may procure all kinds of necessary supplies; poultry, excellent fruits, and vegetables are plentiful, and sold at moderate prices. The city is spacious, and many of the houses well built, but the low marshy coast around the bay, and the stagnant water in the canals, which intersect the streets, generate noxious vapours, rendering this place very unhealthy at all times to strangers. The most unhealthy time, is when the canals have lost much of their waters, about the latter part of the dry season, from September to December. Strangers ought never to sleep on shore, if it can be avoided.† Geo. site of Batavia.

A few miles inland from Batavia, toward the hills, the country is healthy; and the Europeans who reside there, differ much in appearance from those who inhabit the city, for the latter have in general, a sickly and emaciated aspect.

Batavia is a place of considerable trade, but all foreign ships must obtain permission from the Shahbunder, before they can trade with private merchants. The principal exports are sugar, coffee, spices, &c. The imports, opium, iron, and piece-goods, of various kinds.

Fronting the small river or canal that leads to the city, there is a bar of hard bottom, mixed with mud, a little way out, on which there is about 2 or 3 feet at low water The channel for boats to enter the river, is to the eastward of the bar; and there is at times, a surf upon the bar at low water, when blowing strong in the N. W. monsoon, and strangers ought not then to send their boats to the river, for some small boats have been overset upon the

* By mean of many observations of sun and stars on both sides the moon, taken in 3 different voyages, I made the lon. of Batavia 106° 54$\frac{1}{4}$′ E.; but the lon. of the Dutch astronomer, mentioned above, is probably nearest the truth, particularly as some navigators have made it less than the lon. stated above.

† A tea-spoon full of red bark taken in a glass of port wine, or other cordial, at rising in the morning, has been thought an excellent preventative against the damp vapours, which occasion the Batavia fever. I generally used some preventative of this kind, and never slept on shore, during 4 voyages to this place, and always escaped the fever, which proves fatal to thousands.

bar, and the people devoured by the crocodiles, which are here, of large size, and very numerous.

Anchorage. Ships seldom moor in the road, for the anchors are generally buried in the soft mud; small vessels anchor in $3\frac{1}{2}$ or 4 fathoms, about a mile off shore; and large ships in 5 or 6 fathoms, about $1\frac{1}{2}$ or 2 miles off, with the dome of the church from S. to S. by W. If a ship ground on the main, no danger is to be apprehended, the mud flat being very soft; and the rise and fall of tide, is not more than 6 feet on the springs. There is little or no variation at present in the road of Batavia, or in the seas adjacent.

Islands fronting the road. The small Island Edam, the outermost of those opposite to Batavia, is in lat. 5° 57′ S., and bears from Batavia Observatory N. 10° E.; there is a Flagstaff upon it, and like most of the other islands, it is clothed with trees. Hoorn Island, bears from the road N. by W.; Onrust is the great marine depot, where the ships are hove down by cranes erected upon the wharfs, when they require repairs; and this small island, being the naval arsenal and dock yard, abounds with inhabitants.

The N. W. monsoon generally sets in at Batavia and along the coast of Java, about the beginning of November; and the subsequent strong winds, and heavy rains, greatly cool the atmosphere.

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## *DIRECTIONS for SAILING from BATAVIA, and SUNDA STRAIT, to the STRAIT of BANCA: ISLANDS and DANGERS in the PASSAGE.*

To sail from Batavia Road, DEPARTING from BATAVIA, and bound to Banca Strait, a ship should steer out of the road with the dome of the church S. $\frac{1}{4}$ E. or S. $\frac{1}{2}$ E., which will carry her between the Rynland Shoal and Eastern Reef: from thence, with the dome of the church from South to S. $\frac{1}{2}$ E., she may continue to steer to the northward, through the Great, or Edam Channel, leaving the Islands Hoorn, Monnikendam, and Haerlem, to the westward; and Enkhuysen, Edam, and the other islands to the eastward. From Edam she ought to steer for the

to the South Watcher. SOUTH WATCHER (Zuyder Watcher) in lat. 5° $41\frac{1}{2}$′ S. and $8\frac{1}{2}$ miles West from Batavia, by chronometer, bearing about N. 34° W. from Edam, distant 19 miles; and when it is approached within 3 leagues, it should be brought to bear to the northward of N. W., to avoid a small doubtful shoal called by the Dutch Nasomver Droogte, situated about 2 leagues S. Eastward from the island. Having passed on either side of the South Watcher, at 2 or $2\frac{1}{2}$ miles distance, a course may be steered to the North and N. N. West for the North Watcher, giving the easternmost of the Thousand Islands a birth of 3 or 4 leagues.

Thousand Islands. THOUSAND ISLANDS, are a group or chain of numerous small islands, extending nearly N. W. and S. E. and bounding the west side of the passage betwixt the South and North Watcher. The northernmost island of the chain, is in about lat. 5° 22′S., and as the southernmost islands, to the westward of the South Watcher, have shoals surrounding them, it is prudent to give a birth of at least 2 or 3 leagues to them in passing. The westernmost isle of the group is separated from the others, and called Pulo Estam, or West Island. In sailing betwixt the North and South Watchers, care is also requisite to avoid the following shoals, to the eastward of the passage, their situations not being very correctly known.

Brewer's Droogte. BREWER'S DROOGTE, the southernmost of these shoals, is said to be a sand above

water, thought to lie in about lat. 5° 22′ S. nearly on the meridian of Edam, and in a N. Easterly direction from the South Watcher. MOOLENWERF, another shoal, is said to lie 3½ or 4 leagues to the northward of Brewer's Droogte, probably the danger seen by the Arabella in 1715, which she made in lat. 5° 11′ S. PRUYSEN'S DROOGTE, is said to be dry at low water, situated 4½ or 5 leagues to the W. N. W. of Brewer's Droogte, and may be passed on either side, the depths between them being from 15 to 20 fathoms, and between Pruysen's Droogte and the Thousand Islands to the westward, from 15 to 22 fathoms. Moolenwerf. Pruysen's Droogte.

One of these shoals was seen by the Elphinstone, on the 27th of August, 1812. At 8 A. M. the South Watcher bore S. 24° W. distant 5 or 6 leagues, steered N. N. E. 9 miles till noon, when breakers supposed to be on the Pruysen's Droogte, bore N. 48° W. about 6 miles, but no part of it visible above water. When the breakers on the shoal bore E. 8° S., distant 3 miles, the Alnwick Castle on the 27th of August, 1812, observed at noon in lat. 5° 17′ S., lon. 106° 53′ E. by chronometers from Batavia. Saleby Castle, on the 22d of May, 1815, at 9 A. M. when Pruysen's Droogte bore West 1½ mile, had soundings 12½ fathoms. At ½ past 10 A. M. 1 of the Thousand Islands in sight from the mast-head bearing S. W. ½ S. At noon lat. observed 5° 16′ S., Pruysen's Droogte bearing W. 12° N., distant 5 or 6 miles. The shoal seen by these 3 ships, appears to be one and the same, or that called Pruysen's Droogte, situated by their observations in lat. 5° 17′ S. and bearing from the South Watcher N. 10° E. distant 25 miles.* Geo. site.

ARMUYDEN BANK, in lat. 5° 13½′ S., and bearing from the North Watcher E. 5° S. distant 5 or 5½ leagues, is an island or bank consisting of loose coral, elevated 10 feet above the sea, and about a mile in circuit, environed by a reef of rocks, according to an examination made of it by H. M. ship Psyche in 1812, when her boats landed there; and from its highest part, the North Watcher was just visible bearing W. ¼ N. This bank abounds with birds' eggs in some seasons; the soundings within 1 or 2 cables lengths of it are 9 and 10 fathoms, and from 10 to 14 fathoms in the channel between it and the North Watcher. Armuyden Bank.

When the Armuyden Bank bore E. by N. ½ N. distant 3 miles, the Wycombe saw another sand bank bearing S. S. E.; the Dutch place also a shoal 6 miles to the S. W. of the North Watcher, but probably some of these are doubtful. Those which really exist, are not discernible above 5 miles from a ship's deck in a clear day.

NORTH WATCHER, in lat. 5° 12½′ S., lon. 106° 32′ E. or 19¾ miles West from Batavia by chronometer, may be passed on the East or West sides, at 1, 2, or 3 miles distance: about ¾ of a mile from its West side, the soundings are regular from 11½ to 12½ fathoms, but a coral reef with only 6 feet water in some parts, stretches around the South end of the island to the distance of about ½ a mile, with a rock in one place above water. Both this and the South Watcher are small, covered with trees, and may be seen at the distance of 6 or 7 leagues. Geo. site of North Watcher.

From the South Watcher, a ship may, if the wind hang easterly, steer about North, giving a wide birth to the Thousand Islands, and afterward pass to the eastward of the Armuyden Bank and North Watcher. Having got into about lat. 5° S., or being clear of the North Watcher and the adjacent shoals, she may shape a course for Lucepara at the entrance of Banca Strait, which bears from the North Watcher N. 10° W. distant 40 or 41 leagues. Should the wind incline at S. W. and Westward, it will be prudent to steer more westerly, To sail from the South Watcher toward Banca Strait.

* The Duke of Dorset, on the 20th of May 1715, sent her boat to sound near the rock, stated in the journal, to bear about N. E. from the South Watcher, distant supposed about 2 leagues; and it was found to be a little above water, not ½ a ship's length in extent, having close to it 13 fathoms water. This must be a different shoal from that described above, or its distance estimated from the South Watcher is erroneous in the Duke of Dorset's journal.

borrowing toward the banks that project from the Sumatra coast to 9, 10, and 11 fathoms; but these, ought not to be approached under 8 or 9 fathoms, particularly in the night.

The soundings in this track, however, are not always a sufficient guide, the depths varying from 13 to 10 or 9 fathoms, in a direct line between the North Watcher and Banca Strait, and being nearly the same in the track between that island and Gasper Strait. In lat. 3° 45′ S. there is a Five Fathoms Bank, distant about 11 leagues from the Sumatra coast, which might be mistaken for the shore bank, were a ship to get upon it in the night. As the soundings are not a sufficient guide, it may be prudent to keep well to the westward in daylight, and get a sight of the Sumatra coast at times, edging out in the night as circumstances require.

Geo. site of North Island.

NORTH ISLAND, in lat. 5° 41′ S., lon. 105° 49′ E. or 1° 2½′ West from Batavia by chronometer, and about a mile or more from the Sumatra shore, is small, of an even aspect, and may be seen about 7 or 8 leagues. Off its South point, there is a small islet, with a spit projecting a little way, which must have a birth in passing; and with the body of this island bearing N. W. about ¾ of a mile, the Royal Charlotte grounded on a knowl on the 18th of January, 1813, with 3½ fathoms water on it, and from 4½ to 5 fathoms close to it on both sides. This Island is on the meridian of the West part of Thwart-the-way, and is distant about 10 miles N. 16° E. from the highest of the Zutphen Islands.

Three Sisters and adjacent coast.

THREE SISTERS, are 3 small islands near the Sumatra shore, about a league to the S. S. Westward of North Island; there are 2 white cliffs on the low coast between them, with a watering place upon the main, a little to the southward of the southernmost White Cliff; and firewood contiguous, where ships sometimes used to fill up their water in the westerly monsoon, particularly those bound from China to Europe, by Banca Strait. The coast forms a bay between North Island and the Sisters, and here, ships in want of water, used to anchor in 8, 10, to 12 fathoms, a little to the northward of the North Sister, with North Island bearing about N. by E. or N. 14° E., off the main 1½ or 2 miles. The best situation, however, for obtaining a speedy supply of water, is to anchor in 7 or 8 fathoms mud, abreast of the middle of the opening between the South and North Sisters; for the best watering place being abreast of the latter, close to the southernmost White Cliff, the boats will make 2 trips here, for 1 that they could accomplish to the place where ships commonly anchor, as the tide runs chiefly to the southward in this season.

Amongst the Sisters, the depths are from 2 to 3 fathoms, and the coast of this bay is generally lined by a shoal mud flat. About a mile from the North Sister, with the North end of it bearing W. S. W., the water shoals from 12 to 6 fathoms at 1 cast of the lead, in standing to the southward; and when the North end of the North Sister is on with the White Bluff Cliff, bearing about W. ½ N., there are overfalls from 13 to 7 fathoms. There is an islet near the main, about 2 miles southward from the Sisters.

Geo. site of the Two Brothers.

TWO BROTHERS, in lat. 5° 9½′ S., (the northern one) lon. 106° 5′ E., or 46¾ miles West of Batavia by chronometer, bears from North Island N. 27° E., distant nearly 12 leagues, and from the North Watcher W. 6½° N. about 27 miles; these are 2 small islands near each other, covered with trees, of similar appearance, and may be seen 6 or 7 leagues off. They are in 1 bearing N. by E. and S. by W., and lie about 6 leagus from the Sumatra coast. From each end of these islands, a reef projects to a small distance, which lines also their East and West sides, but they may be approached on the West side occasionally within ½ a mile, in soundings of 10 or 11 fathoms: there is said to be a small channel with deep water between them.

To sail from Sunda Strait

SHIPS having passed through Sunda Strait, either between Thwart-the-way and the

Zutphen Islands, or by the channel betwixt Java and the Button, should steer from these islands, (or after rounding the Button) a direct course for the Two Brothers, if bound to Banca Strait. The depths will soon decrease in steering to the northward, and after passing North Island, 11 or 12 fathoms are good depths to preserve, particularly with a westerly wind; for it is prudent to keep within a moderate distance of the Sumatra Coast, to avoid several dangers in the offing. With a working wind, a good mark in day-light, when standing toward the main, is to tack when North Island and the High Zutphen Island are in one; the depth will then, be generally 7 or 8 fathoms, and a large ship ought not to go under these depths, in working betwixt North Island and the Two Brothers. The latter, may be passed on either side within a few miles, to avoid the adjacent shoals, some of which are very dangerous. to the Two Brothers.

SHAHBUNDER SHOAL, named from a Dutch ship that narrowly escaped being lost on it, lies about 7 miles W. by N. $\frac{1}{4}$ N. from the South Brother; but it is extensive, formed of various patches, and seems to be the outer extremity of the shoal bank that projects along, and far out from this part of the Sumatra Coast. The French ship Jupiter, returning from China, grounded, and had part of her keel broken off upon this shoal. The Sandwich grounded on 1 of the patches, returning from China in January, 1749, by borrowing too near the coast; when aground in 17 feet water, the northernmost part of Sumatra in sight bore N. by W., the southernmost part W. S. W. $\frac{1}{2}$ S. and the North Brother E.N.E. Easterly, distant about 3 leagues. She struck very hard, and after being lightened by starting the water, and throwing some lumber over-board, she was forced over the shoal with a brisk wind, after grounding 3 times on the different patches. As the depths decrease gradually toward this shoal, the lead if attended to, will indicate its proximity; and a ship passing between it and the Brothers, should keep within 1, 2, or at most 3 miles of the latter, taking care not to borrow under 9 fathoms toward the coast, which in day-light, may be kept in sight, if the weather be clear. The only high land near the shore on this part of the Sumatra Coast, is a sloping hill with a knob on its summit, situated in lat. 5° 20′ S., generally called Knob Hill.* Shahbunder Shoal.

DANGERS to be avoided by ships steering a direct course between Sunda Strait and the North Watcher, or in sailing between this Island and the Brothers, are the following.

JASON ROCK, on which the ship of this name struck in 1742, is said to lie W. N. W. 2 leagues from the westernmost isle of the Thousand Islands, and 6 leagues S. Westward from the North Watcher, but the Warren Hasting's boat could not find it in this situation. This rock is not laid down in some Dutch charts, which have a shoal placed on them about 6 miles S. W. from the North Watcher; its true position, seems, therefore, very imperfectly known. Jason Rock.

DOLPHIN ROCK, or SHOAL, where the ship of this name was aground, is said to be nearly even with the water's edge, and situated about 2 leagues S. S. E. from the South end of the Two Brothers; but the true place of this shoal, seems also, not correctly determined. Dolphin Rock.

LYNN SHOAL, is about a cable's length in extent North and South, having only 2 feet coral rocks on it in some places, and from 14 to 9 fathoms around. When the ship Lynn was aground on it in 1748, the Two Brothers bore from W. by N. $\frac{3}{4}$ N. to W. N. W. $\frac{1}{2}$ N., distant about 3 leagues. The Bridgewater's boat examined this shoal, and found it to bear from the South Brother E. S. E. distant 8 or 9 miles. Capt. Waterman, saw this shoal in the ship Volunteer, on the 29th of July, 1813, when blowing strong with a considerable sea, yet the breakers on it were not high, nor will it be visible when the sea is smooth. When Lynn Shoal.

* Not very conspicuous in some views.

the South Brother and it were in one, they bore W. by N. ½ N., the North Watcher E. ¼ S. then distant from the shoal ¾ of a mile.

Brouwer's Shoals.

BROUWER'S SHOALS, in lat. 5° 5′ S., are composed of 2 coral reefs separated about ¼ mile, with a dry patch of sand and coral on each, which are in one bearing N. 17° E. and opposite. They are distant from the Two Brothers 9 or 10 miles, the North end of the shoal bearing from the North Brother N. 64° E., and the Southern extremity bears N. 63° E. from the South Brother. From the North Watcher, the North part of the shoal bears N. 52½° W., and the southern dry patch bears N. 55½° W. from the same island. The whole extent of this shoal, is about a mile and ¼ mile in breadth; in the swatch betwixt the dry patches, there are irregular soundings, from ¼ less 5 to 15 fathoms; and hard ground stretches out from the North and South ends of the shoal. To the eastward and westward of the shoal, at a small distance, the bottom is soft, and the depths are generally 14½ and 15 fathoms regular soundings, about 1 or 1½ mile to the eastward of it.

Directions.

To avoid the Brouwer's and Lynn Shoals on the East side, a ship ought to keep nearer to the North Watcher than to the Two Brothers; and she ought to keep within 2 or 3 miles of the latter, if it is intended to pass to the westward of these shoals. To avoid the Dolphin Rock, a ship passing between it and the Two Brothers, should not bring these islands to the westward of North.

Coast and banks from the Two Brothers to Lucepara.

SUMATRA COAST, between the Two Brothers and Lucepara Island at the entrance of Banca Strait, is all low land and clothed with trees; several rivers in this space fall into the sea, and shoal banks project out 2 or 3 leagues from the land, in some places. The most considerable of these rivers, called Tollongbouang, in about lat. 4° 23′ S., is fronted by an extensive bank, with very shoal water on it, stretching nearly 3 leagues off, and several miles parallel to the coast.

Farther northward, in about lat. 4° S., another extensive bank projects to a greater distance from the coast than the former, with various shoal soundings on it, and several dry patches. This is generally called the bank or shoals off Tree Island, being situated to the East and S. Eastward of a point of land having tall trees on it, which is thought to be separated from the main by a small channel, and therefore called Tree Island. About 7 leagues E. N. Eastward from Tree Island Bank, and 10 or 11 leagues to the S. S. E. of Lucepara, in about lat. 3° 45′ S., there is a bank (already mentioned) with 5 or 4½ fathoms on it, or probably less water in some parts, which several ships have mistaken for the former: this outer bank consists of fine grey sand, and the edge of Tree Island Bank of coarse sand and gravel. The depths betwixt these banks are generally from 9 to 11 fathoms, but great care is requisite when sailing hereabout in the night, as several ships by borrowing too close to the coast after coming through Banca Strait, have grounded on Tree Island Bank, and were in great danger.

Geo. site of this island.

LUCEPARA ISLAND, about a mile in extent North and South, situated at the southern entrance of Banca Strait, is in lat. 3° 13′ S., lon. 106° 10′ E., or 5* miles East from the Two Brothers by chronometer, bearing from them N. 2½° E., distant 39 leagues. It is covered with tall trees, having a small peak on it at one part, and a little rising at the other end, when viewed from the S. Eastward, and may be seen about 5½ leagues from the deck.

A reef projects from the island 2 miles to the S. S. E., and shoal spits of sand extend 4

* Captain Lestock Wilson, made the difference of longitude 5 miles, by excellent chronometers, which is probably near the truth. Lieut. Ross, in his survey of the shoals to the northward of Lucepara, made this island in lat. 3° 13½′ S by observations taken on it, and in lon. 106° 12′ E., or 42½ miles West of Entrance Point, at the S. E. part of Banca, by chronometers.

leagues to the N. W. and N. N. Westward; a reef also lines the North and East sides to $\frac{1}{3}$ of a mile distance, with 3 fathoms close to it, from whence the depths increase gradually to the N. E. and eastward, but there is 6 or 7 fathoms within $\frac{3}{4}$ of a mile of its S. Western side. On the 4th of January, 1813, the Discovery anchored in $6\frac{1}{4}$ fathoms blue mud, with the island bearing S. W. $\frac{1}{2}$ S., distant $1\frac{1}{2}$ mile, and Lieut. Ross, landed in the boat, on a sandy beach, on the East side, a little way to the southward of a projecting rock with a tree on it. No fresh water was found, nor could any turtle be procured, although people were stationed on the beach at night; but the island abounded with green and cream coloured pigeons, of which 46 were shot.

Capt. Torin, of the Coutts, sent his boat in 1798, to the S. W. side of the island, where a fine spring of fresh water was seen, which appeared to be frequented, probably by the Malay proas.

To sail from the Two Brothers to Banca Strait.

A ship bound to Banca Strait, having approached the Two Brothers bearing to the eastward of North, should pass near them on the West side, if the wind is favorable; from thence, she ought to steer North and N. by E. for Lucepara, endeavouring to keep in soundings from 9 to 12 fathoms, as a direct course cannot be depended upon, on account of irregular currents, or tides setting out from the rivers. Neither can the soundings in this tract be implicitly trusted to, being irregular from $8\frac{1}{2}$ to 11 or 12 fathoms in some places, particularly contiguous to Tree Island Bank, and the edges of the other banks projecting from the coast of Sumatra; also in the vicinity of the $4\frac{1}{2}$ or 5 fathoms bank in the offing. It is, however, prudent, to borrow toward the main, if the depths increase to 12 or 13 fathoms; and to haul off from it, if they decrease to $8\frac{1}{2}$ or 9 fathoms toward the banks that line the coast. Near these, the soundings are generally more irregular, than farther out from the land in 12 and 13 fathoms; but in the latter depths, a ship will be too far off the coast with a westerly wind.

When the weather is clear, during the day, the best guide is generally to keep sight of the coast from the deck of a large ship, edging out occasionally in the night, or when the depths decrease to $8\frac{1}{2}$ or 9 fathoms.

Having passed the bank off Tree Island, the coast may be approached with greater safety, and the depths will decrease regularly steering to the northward for Lucepara, to $5\frac{1}{2}$ fathoms when it bears N. $\frac{1}{2}$ E., distant about 3 or $3\frac{1}{2}$ leagues. The South point of Banca, situated in lat. 3° 6′ S., is fronted by extensive banks and overfalls, some of them distant 4 or 5 leagues to the South and S. S. Westward, with soundings of 9 to 14 fathoms between them. Ships which steer from the Two Brothers to give a wide birth to the banks adjoining to the Sumatra coast, by keeping in 12 and 13 fathoms, are liable to fall in with the banks which front the South end of Banca; which, although not considered dangerous, 7 or 8 fathoms may be got upon them, when the land is seen to the northward, distant 7 or 8 leagues, but the coast of Sumatra will not be discernible; in such case, they must haul to the westward to round Lucepara, the channel betwixt that island and Banca, not being thought safe, except for small vessels. There may, however, be a safe channel to the eastward of Lucepara, toward the Banca shore, for Commodore Watson passed to the eastward of the island Lucepara during the night, in the Revenge, and had never less than $5\frac{1}{2}$ fathoms water; but Lieut. Ross, in his late examination of this place, found several shoal spits separated by gaps of deep water; and he is of opinion, that no large ship ought to attempt the passage between Lucepara and Banca, for she would probably ground upon some of the shoal spits which extend $5\frac{1}{2}$ leagues North of Lucepara, and have $1\frac{1}{2}$ to 3 fathoms water upon them, and from 7 to 10 fathoms close to.

If a ship, sailing in the night between the Two Brothers and Banca Strait, should get into shoal water, or be uncertain of her situation, it will be prudent to anchor immediately, and wait for day-light; for the depths are moderate, and the bottom throughout this track, generally favorable for that purpose.

# *STRAIT of BANCA; with SAILING DIRECTIONS.*

Banca Strait. STRAIT OF BANCA, bounded by the island Banca to the East, and by the coast of Sumatra on the West side, extends from the island Lucepara about 34 leagues, with an undulating course to the N. Westward. The Sumatra coast being low marshy land, inundated at high water, and only the trees discernible, navigators are liable to estimate their distance from it greater than the truth; but it ought not to be approached too close, on account of a shoal *mud* bank, which extends in some places 2 or 3 miles from the shore. Many ships, at different times, have grounded upon this *mud* bank, adjoining to the coast, and got off with great difficulty after much labour, and sometimes with loss of anchors.

The island of Banca is more elevated, having a chain of hills generally called St. Paul's Mountains, contiguous to its South end; but Parmasang, and Monopin Hills, on the West side of the island, are more conspicuous. Exclusive of the dangers between Lucepara and Banca, Pulo Laboang Dapper, bearing from Lucepara E. N. E. is a small island situated near the Banca shore.

Tides in the Strait. TIDES, in Banca Strait, are very irregular, and influenced greatly by the prevailing winds: in favorable weather, the flood runs in, at both ends of the strait, to the Nanka Islands nearly in the middle of it, where they meet. During the westerly monsoon, when rains prevail, the freshes set out of the rivers on the Sumatra coast toward the opposite side, which should be guarded against in the night.

There are sometimes, 2 floods and 2 ebbs in 24 hours; at other times, only 1 flood and 1 ebb during the same interval. When strong S. Easterly winds prevail, the flood runs strong into the southern part of the strait, frequently for 14 or 16 hours; and the ebb in the opposite direction, for 8 or 10 hours. During the opposite season, particularly in December, and January, when N. W. and northerly winds predominate, the ebb, or rather current, sometimes runs strong out of the southern part of the strait for 12, 14, and even 18 hours; and during the remainder of the 24 hours, there is only a slack or weak indraught, when the water rises over the ground. In this season, it is almost impossible for an indifferent sailing ship to get through the strait to the northward.

In August, and also in other months, the flood has been experienced at times, to run in, about 12 hours, and the ebb out of the strait for the same length of time, taking a turn all round the compass during their change. The velocity of the tide on the springs, is sometimes from 3 to 4 miles per hour, when the wind is strong; and the perpendicular rise, from 9 to 12* feet, both within the strait and to the southward of Lucepara. In the channel, between this island and Sumatra, where the bottom is soft over an extensive flat, the rise and fall of tide has seldom been found more than 9 or 10 feet; notwithstanding, the water is so shoal there, that large ships, deeply laden, are liable to touch the ground at low water.

Western channel. WESTERN CHANNEL, formed between the island Lucepara and a low green point on the Sumatra coast opposite, called Lucepara Point, is generally chosen by vessels proceeding through Banca Strait. In this channel, and to the distance of 3 leagues southward from Lucepara, the water is shoal on an extensive flat; the depths on which, are generally from $4\frac{1}{2}$ or $4\frac{3}{4}$ fathoms, to 5 and $5\frac{1}{2}$ fathoms. The West side of the channel is bounded by a mud flat, projecting 2 or 3 miles in some places from the coast; and several dangerous spits or shoals lie to the North and N. Westward of Lucepara, which greatly contract the chan-

* It has been stated, that the tides in Banca Strait have been known to rise and fall about 18 feet; if this ever happen, it must arise from some supernatural cause.

nel. The distance from the island to the coast is about 3 leagues or more, but the fair channel for ships, is not more than 2 or 2½ miles wide in some places, particularly to the N. W. of Lucepara, where the shoals in the offing approach nearest to the mud flat that fronts the coast. It is prudent for navigators, if unacquainted, to send a boat a-head to sound in this part of the strait, which may borrow her soundings from the Sumatra coast, on the edge of the mud flat, to 4 and 4½ fathoms; or she may sound on the edge of the westernmost shoals in the offing, as circumstances require.

and mud flat. Caution requisite in passing through.

When passing through the channel, the bottom will *in general*, though not always, be hard sand, if a ship draw near the shoals adjacent to Lucepara; and always soft mud, on the edge of the flat bounding the West side of the channel. Although close to the edge of the N. Westernmost shoal, there are 5½ and 6 fathoms soft ground, it is generally hard on the edges of these shoals; a ship ought, therefore, to keep in soundings, if possible, neither hard, nor too soft, to preserve the mid-channel track.

THE SHOALS, to the N. W. and northward of Lucepara, that bound the channel on the East side, are long narrow spits extending N. N. W. and N. W. from that island; excepting a small patch with 2½ fathoms on it, situated close to the edge of the extensive bank that lines the East side of the channel. Monsieur Bonvouloir, found them separated by a narrow passage, when he grounded upon the large bank, in the ship Fatty Rair, on his passage from Batavia, in 1795. When aground, Lucepara bore S. 30° E., Lucepara Point S. 31° W., the First Point N. W., distant from Lucepara about 3 leagues, and the small patch then bore to the W. N. Westward. When the tide is low, these shoals may sometimes be discerned by the discoloured water, by breakers, or ripplings upon them; but they are not always visible.

Shoals bounding the East side of the channel.

Fatty Rair grounded on one.

The Cuffnels, homeward bound, being too far from the Sumatra shore, got aground upon the N. E. side of the large bank, on the 21st of February, 1803, Lucepara bearing S. 32° E., Lucepara Point S. 32° W., and the First Point N. W. After getting afloat, and warping the length of 4 hawsers to the N. N. E., she anchored in 10 fathoms mud; Lucepara Island then bore S. 29° E., Lucepara Point S. S. W. ½ W., First Point of Sumatra N. 49° W., St. Paul's Mountains N. 78° E., Pulo Laboang Dapper E. 3° S., observed lat. 3° 4′ S. From this station, the North end of the shoal was found on examination, to extend N. N. W. about 1½ mile from the ship; and to round it, she steered N. N. E. 2 miles in 10 fathoms mud, then westward, to get into the proper channel, decreasing the depth to 5 fathoms about 3 miles from the Sumatra shore.

The Cuffnels.

Captain Egeberg, was aground on its western edge in 3 fathoms, in a Swedish ship, Lucepara bearing S. E. by S.; the Camfall, a Portuguese ship, had the island bearing the same, when aground. Captain Torin places the bank on which he was aground in the Coutts, in 2¾ fathoms, about 8 or 9 miles N. 42° W. from Lucepara, the First Point then bearing N. N. W. ¼ W., open a little with the western extremity of the Parmasang Hills.

and other ships.

H. M. S. Billiqueux, grounded in 3½ fathoms, and had hard soundings from 2 to 5 fathoms on the shoal, island Lucepara bearing S. 48° E., Lucepara Point S. 42° W., First Point N. 26½° W.

These dangers extending farther to the westward than generally supposed, and the mud flat projecting a great way out from the opposite coast, render the channel very contracted in this part, which may be seen by the following extract taken from Captain Cowman's journal, who passed close to these shoals in the ship Magdalin, August the 12th, 1806. At 10 A. M. the island Lucepara S. E. ½ E., First Point N. N. W. ½ W., in 3 fathoms, distant about 100 fathoms from an extensive shoal, steered along its western edge several miles, in from 3 to 5 fathoms, hard bottom. When the island bore S. E. ¾ E., and the First Point N. N. W. ½ W., had 4½ fathoms hard ground, close to the shoal. The island S. E. ½ E., and First Point N. by W. ½ W., had 6 fathoms soft, about 100 fathoms distant from the

The channel greatly contracted by shoals.

shoal. The island S. 54° E., First Point N. 15° W., had 8 fathoms, about 200 fathoms to the northward of the shoal, and carried from 12 to 14 fathoms from its steep northern verge, to the First Point. This shoal is extensive, and shewed itself very plain, and the flat stretching from the opposite coast of Sumatra was nearly dry, the tide being very low: the channel between them, did not appear to be more than $1\frac{3}{4}$ or 2 miles broad.

Sailing directions. In entering the strait, a ship ought not to bring the island to the southward of S. 54° E., until the First Point bears N. 15° W., which will bring her pretty near the Mud Flat; she may then steer North and N. by E. to round the First Point at 3 miles distance.

SHIPS, bound into the strait from southward, generally fall in with the island Lucepara bearing between N. by E. and N. W., in soundings from $5\frac{1}{2}$ to 8 or 9 fathoms; if it is seen bearing to the westward of North, steer toward the Sumatra coast until Lucepara is brought to bear North, distant 3 or 4 leagues. From hence, steer betwixt W. N. W. and N. W., keeping about 2 leagues from the island, observing as it draws well to the eastward, to borrow within 4 miles of the coast and Lucepara Point, bearing nearly West from the island about $3\frac{1}{2}$ leagues. It is prudent to take soundings from the West side of the channel in this part, keeping in soft ground from $4\frac{3}{4}$ to $5\frac{1}{4}$ fathoms.

When Lucepara bears E. N. E., Parmasang Hills will be discerned if the weather is clear: with the western extremity of these hills bearing N. by W. $\frac{1}{2}$ W., is the fair channel, and by the time Lucepara is brought to bear E. by S. $\frac{1}{2}$ S., the First Point ought to be in one with the western extreme of Parmasang Hills, bearing about N. by W. $\frac{1}{2}$ W.: you will now have 5 or $5\frac{1}{4}$ fathoms, soon after $4\frac{3}{4}$, or probably $4\frac{1}{2}$ fathoms, for a little way. With the West end of Parmasang Hills kept on with the First Point, steer N. by W. to N. N. W., so as to bring the highest Parmasang Hill nearly on with it when Lucepara bears S. 59° E.; here, you will have 6 or $6\frac{1}{2}$ fathoms, being past the shoalest water, and in the narrowest part of the channel, abreast of the western extremity of the shoals in the offing, and the mud spit projecting from the coast. Continue to steer about N. by W., still observing to keep the First Point in one with the western extremity of the Parmasang Hills, until Lucepara bears S. 50° E.; being now clear of the shoals in the offing, steer about N. by E., to round the First Point at 3 or 4 miles distance, in 10 or 12 fathoms water. The West extreme of Parmasang Hills kept on with the First Point, is a safe leading mark to avoid the shoals on the East side of the channel, as stated by Capt. Torin of the Coutts.

Should the weather be cloudy, and the Parmasang Hills not visible, keep within 3 or 4 miles of the Sumatra shore, observing not to bring Lucepara to the southward of S. 54° E., until the First Point bears N. by W. $\frac{1}{2}$ W.: when within 5 or 6 miles of the latter, edge out a little, to avoid the shoal flat to the southward of that point, being then clear of the western extremity of the shoals in the offing; but do not bring the First Point to bear so much northerly as N. by W. $\frac{1}{4}$ W., when it is approached within the distance mentioned above, as the Hindostan's boat had $3\frac{1}{4}$ fathoms on the shoal flat with this bearing.

Hindostan's Shoal. To the E. N. Eastward of the First Point, there is a small bank with 3 fathoms on it, and $4\frac{1}{2}$ or 5 fathoms all round; the Hindostan got upon this spot on the 7th of May, 1798, and when aground, the southernmost hill of Mount Parmasang bore N. 31° W., low land about Point Lalary N. 54° W., low land about First Point S. 72° W., Lucepara S. 12° E., a hill like an island on Banca S. 68° E., and a rocky point nearly East. The fleet from China, had intended at this time, to proceed out of the strait on the East side of Lucepara, but after the Hindostan got clear of the bank on which she grounded, they hauled to the westward for the common channel.

West side of the channel. THE MUD FLAT, that lines the coast of Sumatra, although not so dangerous as the shoals on the East side of the channel, should nevertheless, be approached with caution, for to the southward of the First Point, it projects about 2 miles from the shore; and its verge

*here*, directly opposite to the N. W. extremity of those shoals, is steep to. On the 1st of September, 1803, the Ganges grounded on the Mud Flat to the southward of the First Point, this point bearing N. by W. and the island Lucepara S. E. by E. ¼ E., off shore 2 or 3 miles. This part of the flat appeared to be a spit, for the boats found 8 and 9 fathoms to the W. S. W., with very irregular soundings about the ship. Several ships have grounded there.

The journal states, that it is not safe to approach the First Point under 10 to 12 fathoms, nor nearer it than 3 or 4 miles: this ship lay 20 hours in the mud, was obliged to carry out a bower and stream anchor, which were lost, with 2 men. The Cuffnells, on the 7th of March, 1811, at 2 P. M. grounded on the Sumatra flat, after having shoaled regularly to 4 fathoms, island of Lucepara bearing S. E., coast of Sumatra from the First Point N. by W. ½ W. to South, and Parmasang Mount just open with the Point. Carried out the stream anchor astern, and hove off at 2 A. M. being then high water, and anchored about ½ a mile to the N. E. of the edge of the flat. Other ships, when aground on this mud flat, have been obliged to start part of their water, before they could be floated off.

In the Hindostan's journal, 20th April, 1800, Captain Millett, made the following remarks relative to this bank. To the southward of the First Point of Sumatra, a mud bank projects about 2 miles from a green point of land: when Lucepara bore S. E. ¼ S, just in sight, First Point N. by W. ¼ W., and the point from whence this bank extends farthest out S. by W. ¾ W., the boat had 3¼ fathoms; and standing off from it, the water deepened suddenly to 5½ fathoms. The Madras put her helm down in 5½ fathoms, and grounded; this bank ought not to be approached under 6½ or 7 fathoms.

August 30th, 1803, the Coutts anchored in 5 fathoms soft mud, Lucepara Point S. 40° W., the island E. 22½° S., and the First Point N. 9½° W., distant from the nearest shore 3½ miles; at low water she had only 3½ fathoms, and grounded, the tide having fallen 1½ fathom. She was nearly in the fair channel at this time, but rather a little toward the Sumatra side; for 4½ fathoms is generally the least water in the fair track, with Lucepara bearing E. S. Eastward, which is the shoalest part of the channel. Farther to the northward, the depth increases toward the shoals in the offing, and also toward the mud flat that projects from the coast near the First Point.

FIRST POINT, in lat. 3° 0′ S., lon. 105° 58′ E., bearing N. 42° W. from Lucepara Island, distant 17 miles, is low and level, the trees on it being of equal height; and it bears North a little easterly from Lucepara Point. The Mud Flat projecting from this point, is steep, and should not be approached under 10 or 12 fathoms, (which is about a mile off) particularly on the N. E. side; neither ought a ship to stand off too far to the eastward, on account of the bank already mentioned, on which the Hindostan grounded. Geo. site of First Point.

TANJONG PANGONG, OR POINT LALARY, on the island Banca, bears about N. W. by N. from the First Point, distant 13 miles; and the coast of Sumatra takes a westerly direction from the First Point about 5 or 6 leagues, then northerly about 4 leagues to the Second Point, known by a high tree a little inland, very conspicuous above the others. The coast betwixt the First and Second Points forms a deep bight, which is bounded by 2 interjacent points; that nearest to the First Point being generally called the ***False*** First Point, and the other to the northward, the ***False*** Second Point. The whole of the coast here, as in other parts, is fronted by a shoal mud flat, projecting from it about 2 miles in some places.

SECOND POINT, in lat. 2° 41′ S., bears from the First Point nearly N. W., distant 9 leagues; the Sumatra coast in this place, may be approached to 11 or 12 fathoms, about 2 or 3 miles off, but ships seldom stand above ½ or ⅔ channel over toward Banca, on account of an extensive shoal near that side of the strait, opposite to the Second Point. This shoal, called CARANG TIMBAGA, although formerly not considered dangerous, is now ascer- Second Point. Carrang Timbaga.

tained to have several dangerous patches on it: the ship Good Hope, on the 28th of June, 1814, having shoaled suddenly on its edge from 19 to 10 fathoms, the anchor was let go, she had then 6 fathoms rocks under the stern, 4½ fathoms on 1 spot, and 8 fathoms sand at the main chains, Second Point of Sumatra bore then W. 3° S., Point Lalary S. 35° E., Parmasang Peak N. 43½° E., a rock above water S. 70° E., distant 2 miles. Capt. Napier, of this ship, describes the shoal to be a long narrow ridge of rocks and sand, stretching N. W. and S. E. about 2 miles, and thinks the spot of 4½ fathoms where he anchored, to be the least water on it. The first of the flood sets strong to the N. N. E. across the shoal, with ripplings, and the latter part to N. N. W. The boat found regular soundings of 12 and 13 fathoms between the shoal and the rock, with 7 fathoms close to the latter, from which the Second Point bore West, and Point Lalary S. S. E.

The following danger, seen by Capt. Rush, of the Royal Charlotte, on the 15th of January, 1813, seems to be on the Carang Timbaga Shoal. Past noon, saw a reef of rocks a little above the surface of the sea, (but probably covered at high water) distant about 2 miles from the Banca shore, and extending about ¾ of a mile, Parmasang Hill bearing then N. E., Point Lalary S. E. ½ S., Second Point W. ¾ N., and the reef East from us distant about 2 miles.

Lieutenant Ross, of the Discovery, in his survey of the shoals to the northward of Lucepara, ascertained the foregoing shoal to be dangerous. On the 29th of December, 1812, saw some rocks above water, which were on with Point Lalary bearing S. 33° E., anchored in 10 fathoms, and had 7¼ fathoms in the chains, coral rock, on the edge of the shoal. Sent the boat to sound toward the rocks, and the depths decreased to 2 and 1½ fathoms, alternately rocks, sand, and mud. When on the rocks, the Second Point bore W. ½ N., tree on ditto W. 5° S., White Rock N. 4½° E., Paramasang Point N. 8° E., the peak N. 26° E., Point Lalary S. 32½° E., Great Nanca Island N. 16° W.

Directions. The best track in passing from the First to the Second Point, is to keep in from 12 to 18 fathoms, mostly regular soundings, and not to stand above mid-channel, or at farthest ⅔ channel toward Banca, keeping within 5 or 6 miles of the Sumatra shore.

Parmasang Point, on the Banca side of the strait, projecting out from the hills of this name, is steep to, having 5 fathoms very near it, and a rocky islet a little to the northward; between it and Nanka Point, the coast of Banca forms a deep bay, having overfalls and foul ground in this part, which renders it necessary to avoid this side of the strait, and to keep nearest to the Second Point of Sumatra in passing.

Third Point, with sailing directions. THIRD POINT, in lat. 2° 23′ S., bears from the Second Point about N. W. by N., distant 20 miles, and W. N. W. ¾ N. from the highest Parmasang hill; it is a little higher than the others, having 13 fathoms about 1 mile off when it bears S. W. ½ S., and only 3 feet at ¼ mile distance. The coast of Sumatra betwixt these points, forms a deep bay, having a shoal flat stretching across it, and projecting about 4 miles from the shore. To avoid the overfalls on the Banca side, and the flat that lines the Sumatra coast, round the Second Point about 3 or 4 miles distance, then steer northward for the Nanka Islands, keeping in mid-channel; the soundings in this track, will be generally from 20 to 16 fathoms, decreasing toward the Nanka Islands, and being abreast of these at 4 miles distance, haul to the westward for the Third Point, to pass it at the distance of 2 or 3 miles.

Geo. site of Nanka Islands. NANKA ISLANDS, in lat. 2° 25′ S., lon. 105° 48½′ E.,* by chronometers from Batavia, are 3 in number, situated about 4 or 5 miles from the Banca shore; the middle is low, but the outermost, or Little Nanka, and also the large, or Great Nanka, next to Banca, are mode-

* Lieutenant Ross, makes them 1° 13½′ East from the East end of Pulo Aor by mean of 4 chronometers, which agrees exactly with the lon. stated above.

rately elevated. The latter is high in the middle, sloping to a point at each end when viewed from the southward, and is about 1½ mile in extent.

Ships in want of wood or water, frequently touch here, to procure a supply, which may be got conveniently on the largest island; small ships may anchor occasionally on the North side of the islands in 3½ or 4 fathoms, but here, the ground is not very good. The Company's ships, bound homeward, anchor to the Southward or S. W. of them, where they fill up their water, for these islands are preferable for this purpose, to the watering place at North Island, but not so convenient, as at Rajah Bassa. Wood and water.

The Discovery, on the 28th of December, 1812, anchored in 7½ fathoms clay with Great Nanka bearing from N. 18½° E. to N. 59½° E., distant about 2 miles, Little Nanka N. 20½° W. to N. 25½° W., Third Point of Sumatra W. 13° N., Parmasang Point S. 30° E., Parmasang Peak S. 47° E., and a large tree on Sumatra, supposed to be that near the Second Point S. 3° W. The Wexford anchored in 6¼ fathoms, about a mile off Great Nanka bearing from N. 12° W. to N. 33° E., and Parmasang Peak S. 42° E.

Amongst these islands, there are some rocks, and other rocks or reefs, stretch from them to the Banca shore, having only 2 or 2½ fathoms water between them, precluding any safe passage for vessels inside of the islands. From the N. West side of Great Nanka, a reef projects about 2 cables lengths, with rocks above and under water, but the N. E. side is safe to approach with boats, where there are several coves with white sand, that where the watering place is, consists of brownish sand, and the run of water, which is good, may be seen when the tide is low, but at other times, it cannot be perceived without landing. There is a spring of water near the S. E. point of the island, which is not so good as the former, nor sufficient for more than 1 or 2 ships: there are also some springs in a bay, with a sandy beach, on the West side of the island, where H. M. S. Billiqueux, and convoy of 7 sail from China, filled up their water in March, 1811. The tide rises here 12 feet perpendicular, during the springs, and sometimes more.

FOURTH POINT, in lat. 2° 20′ S., bears from the Third Point about W. ½ N., distant 7 leagues; the coast betwixt them forms a concavity, lined by a shoal bank, which may be approached occasionally to 7 or 8 fathoms, regular soundings, but you may keep 3 or 4 miles off shore, not coming nearer the edge of the bank than 10 fathoms. This is considered the safe side of the strait, the Banca side having in some places foul ground and overfalls, and forming a deep bight between the Nanka Islands and Mintow Point, is seldom borrowed on very close; for ships generally keep within 5 or 6 miles of the Sumatra coast, in regular soundings from 9 to 12 fathoms. The Fourth Point may be approached occasionally to 10 fathoms, at the distance of ½ or ¾ of a mile. From the Fourth Point, the coast stretches nearly West about 7 or 8 leagues, and in this space the different branches of PALAMBAN RIVER fall into the sea. Shoal banks project 3 or 4 miles out from these rivers, which are very steep to, from 8 or 9 fathoms, and ought never to be approached under these depths, night or day. This may be considered as a continued bank extending N. W. and Westward from the Fourth Point, from which it projects about 2 miles, but much farther out, a little to the westward of the point, and opposite to Palambam Rivers. Several ships have grounded on this bank, by borrowing too close. The Wycombe, after rounding the Fourth Point about 2 or 2½ miles distance, in 10 fathoms, continued to keep 10 and 11 fathoms until the lead was overhove, and before another cast could be got, she grounded on the edge of the bank, the extremes of Sumatra bearing from W. 6° S. to E. 19° S., Fourth Point S. 58° E., Monopin Hill N. 1° E., easternmost part of Banca in sight N. 45° E., off the Sumatra shore 3 miles. A little way inside of the ship, the boats had 10, 7, and 3 feet water, and the whole of the bank toward the shore and the Fourth Point, seemed very little covered at low tide. About ½ a cable's length outside, the water deepened to 8 fathoms, and in this depth an anchor was laid, by which she hove off the bank on the following tide. The bank is hard

Fourth Point.

Coast, and shoal bank.

Several ships have grounded on it.

sand, covered with a thin stratum of black mud; and as there is 8 fathoms on its steep edge, and 11 fathoms very near, it ought not to be approached under 11 or 10 fathoms, with the lead kept going. To avoid it, in day-light, the Fourth Point should not be brought to the Eastward of S. E. by S. or S. E. ½ S., nor should the point be passed nearer than 3 miles; when to the westward of the point, a ship ought to keep at least 4 miles from the shore. Off Palamban River, it is high water at 8 hours on full and change of the moon, rise of tide 7 or 8 feet.

How it is to be avoided.

Geo. site of Batacarang Point.

BATACARANG POINT, in lat. 2° 0′ S., lon. 104° 53′ E., bearing N. W. by W. 11 or 11½ leagues from the Fourth Point, is surrounded by shoals, stretching out about 2 leagues, and known by a clump of trees which gives it a bluff appearance; the False Point is more sloping and flat, and lies about 6 or 7 miles farther southward, between which, and the Fourth Point, the land forms a deep concavity, where the branches of Palambam River disembogue into the strait. Salsee River, situated nearest to the Fourth Point, is the easternmost branch, the next is generally called False River, the third Palambam River, and the westernmost Salt River. These rivers have inside, from 3 to 8 or 10 fathoms; and 1½ or 2 fathoms outside, in the channels through the bank that fronts them. During the rainy season, large drifts are brought down these rivers by the freshes, which then set strong over toward the West end of Banca; and as the flood sets strong into them, on the springs, great care is requisite in this part of the strait, to avoid being driven too near either shore, both sides being fronted by dangers. PALAMBAM TOWN is about 14 leagues up the river, where the chief trade is tin, procured from the Island Banca, with some pepper, and rattans, the produce of Sumatra.

Small ships, or vessels having only 1 or 2 masts, in passing through Banca Strait, should be always on their guard, to repel any attack from the piratical proas, which often lurk about the strait to surprise defenceless vessels.

Geo. site of Monopin Hill.

MONOPIN HILL, in lat. 2° 0′ S., lon. 105° 14′ E., by mean of chronometers from Batavia and Pulo Aor, is situated on the West end of Banca; and its summit ending in a peak which may be seen at a considerable distance, answers as a guide in approaching to, or departing from the North end of the Strait. About 2 leagues S. 35° W. from the hill, is situated Tanjong Colean, or Mintow Point, the western extremity of Banca, having a fort on it; and the town of Mintow is a little farther eastward. Mintow Bank is composed of hard sand, with soundings from 2 or 3, to 5 fathoms, and it extends a considerable way, nearly parallel to the coast; inside of it there are 10 and 12 fathoms, decreasing regularly toward the shore, where ships anchor in Mintow Road. A ship working through the strait, to keep clear of the outside of Mintow Bank, should not bring Mintow Point to the westward of N. W. by N.

Mintow Town and Bank.

Directions.

Carang Bram Shoal.

CARANG BRAM, an extensive shoal of rocks and sand, dry in some places, forms the eastern extremity of Mintow Bank, and lies 4 or 5 miles from the shore, off a point of Banca called Tanjong Pooni; and this shoal when on with the Peak of Monopin Hill, bears N. 39° W.

Amelia's Bank.

AMELIA'S BANK, of 3¾ fathoms, hard ground, lies about 1½ or 2 miles outside of Carang Bram Shoal, on which the Walmer Castle grounded, and the Princess Amelia touched, when homeward bound from China in 1816: Monopin Hill bears from it N. by W. ⅝ W., and the eastern extreme of Carang Bram Shoal, E. ¼ N. distant 2½ miles, according to a plan of it, by Capt. Balston of the last mentioned ship. The Hope passed inside, between it and Carang Bram, in soundings from 5 to 10 and 12 fathoms; the depths increased gradually from 4½ to 7, 8, and 10 fathoms in a westerly direction from it; and to the southward of

it, at the distance of about ½ a mile, the Warley carried regular soundings of 8 and 9 fathoms, and it ought not to be approached under 7 or 8 fathoms.

Carang Hodjee. Carang Hodjee, is another dangerous shoal, close to the West end of Mintow Bank, and its outer part is distant 5 or 6 miles from Mintow Point, being in one with Monopin Peak bearing from N. E. ½ N. to N. E. ¾ E., and it is very extensive. The rocks on it are all covered at high water, but many of them are visible at ½ tide; close to it on the North and West sides, the depths are irregular from 16 to 30 fathoms. From Tanjong Colean, or Mintow Point, the northern rock of Carang Hodjee bears W. ¼ S., distant 2 miles; other rocks on the shoal, bear W. by S. to W. S. W. from the same point.

To sail into Mintow Road. TO SAIL into MINTOW ROAD, you may pass on either side of Carang Hodjee; if on the East side, Monopin Peak must be brought N. N. E., and with this bearing, steer for Mintow Town, which will carry you about a mile or more to the southward of Carang Hodjee, in 6 or 7 fathoms hard sand, upon Mintow Bank. When over it, the water will deepen to 12 or 14 fathoms, and shoal again gradually toward the shore; the best anchorage is in 10 or 11 fathoms, about 2 or 3 miles off the town, Monopin Peak bearing N. 10° E., Tanjong Pooni S. 75° E., and Mintow Point N. 82° W. No ship can pass over Mintow Bank with safety if the hill bear to the westward of North, for on the eastern part, toward Carang Bram, it dries in many places. With the hill bearing North, a ship steering for Mintow Road, will cross over the bank in 3 or 3½ fathoms at low water spring tides, the bottom hard sand, coral and shells. With a working wind, keep the hill between North and N. N. E.

If a ship coming from the northward, intend to enter Mintow Road on that side of Carang Hodjee, she ought to bring Monopin Peak E. N. E., which will carry her between Frederic Hendric and Carang Hodjee; and she may pass betwixt the latter and Banca, in a channel about 1½ mile wide, in 18 to 15 fathoms water, borrowing toward the Banca shore, but not under 8 or 9 fathoms. Carang Hodjee must be avoided, for it is steep to, with overfalls near it, and rocky ground, from 16 to 30 fathoms. She may pass Mintow Point within ½ a cable's length, then haul out to a convenient distance from the shore, and proceed to the anchorage abreast of the town.

Coast and dangers to the northward of Mintow Point. TANJONG OULAR, is a point about 5 or 6 miles to the northward of Mintow Point, having rocks projecting about 4 miles from it, the outermost of which, are on with Monopin Peak bearing S. 70° E.

Tanjong Beeat, a little farther northward, has also dangerous reefs of rocks projecting about 4 miles out; when on with Monopin Peak, the outermost of these bears S. 28° E. Betwixt these rocks, and the others called Frederic Hendric, situated about 3½ leagues off the Banca shore, there is a channel near 2 leagues wide, which is seldom frequented except by country traders; and it ought not to be chosen by strangers, for the number and *true* positions of the Frederic Hendric Rocks are not correctly known. A vessel to proceed by it, should not come under 14 fathoms toward Banca, nor stand farther out than to bring the eastermost land in sight called Poonyabang, and appearing like an island, to bear N. E. ½ E.; with this bearing, and Monopin Hill about S. 70° E., a ship will have 18 fathoms hard sand and overfalls, near Frederic Hendric. Inner Channel.

Frederic Hendric Rocks. FREDERIC HENDRIC, has generally been considered a *single* rock, situated nearly midway between the West end of Banca and Batacarang Point, but there is great cause to think that *several* spiral rocks, separated from each other, exist in that situation, which have been mistaken for one and the same rock; this will be perceived by the following remarks.

The Nonsuch, on the 29th of July, 1789, after tacking in 5 fathoms on the edge of the

bank off Batacarang Point, stood E. ½ S. to 12 fathoms, then tacked in 11 fathoms, and immediately grounded, Monopin Hill bearing E. 13° S. off the Banca shore 3 or 3½ leagues, and about 4 leagues from the Sumatra shore. Under the bowsprit, had only 1½ fathom, and 5 fathoms abaft. The tide flowing, she got off, after being lightened forward. The rock on which she grounded, was thought to be the *true* Frederic Hendric. Farther to the northward, she had previously tacked in overfalls from 7½ to 12 fathoms hard ground, on the same side of the channel.

The Charlotte, in 1786, explored another shoal, of considerable extent, thought to be Frederic Hendric, with soundings on it from 2 to 5 fathoms, rocks and sand. The boat at anchor in 1½ fathom on the shoalest part, had Monopin Peak bearing E. 23° S., southernmost extreme of Banca S. 18° E., extreme of the Little Caramanaches N. 43° E., northern extreme of the land E. 35° N. the westernmost island N. 38° E., and a bluff rock near the shore E. 18° S.

The Cæsar anchored in 16 fathoms, had 10 fathoms after veering out cable, and at ½ a cable's length from her, the boat had 2¾ fathoms, Monopin Hill bearing E. S. E. 4 leagues.

A Portuguese ship aground, had the West point of Banca E. S. E., and a point on Sumatra W. ½ N., thought to be Batacarang Point.

Capt. Waterman, of the ship Volunteer, went in his boat to examine Frederic Hendric Rocks in July, 1813, where he perceived white water, but the current setting strong into the strait, carried him past the north part of the shoal. When upon the south part of it in 3 fathoms hard sand, Monopin Hill bore E. 13° S. Mintow Point E. 35° S., high trees of Batacarang Point W. 10° S., and at the distance of a ship's length had 19 fathoms. That part of the shoal where he sounded was very white hard sand, which discoloured the water by the current running over it, as the white water extended out to 17 fathoms at a considerable distance from the shoal. This navigator, thinks the shoal is not above 6 miles distant from the nearest part of Sumatra, and that no ship should deepen above 10 or 11 fathoms, as the water deepens very suddenly from 12 fathoms, which is near the steep edge of the shoal.

Another navigator says, that Frederic Hendric Rock is in one with Monopin Peak bearing E. 20° S., and distant 3½ leagues from Banca. It is generally thought, that 8 or 9 feet is the least water on this rock, but some persons assert that its summit appears above water at times, when the tide is very low. This may *probably* happen, as the perpendicular rise and fall of tide is about 2 fathoms on the springs; notwithstanding, navigators in passing, seldom discern it, or perceive breakers upon any of these dangers which go by the name of Frederic Hendric. To avoid them, ships passing through the fair channel, ought to keep in 6 or 7 fathoms, on the edge of Batacarang Bank, and never deepen to the eastward above 9 fathoms when Monopin Hill bears from East to E. S. E. ¼ S.

To avoid them,

and proceed from the Fourth Point out of the strait.

A SHIP bound out of the strait, having passed the Fourth Point at 3 or 4 miles distance, in soundings 11 or 12, but not under 10 fathoms, should steer about N. W. by W. for Batacarang Point, attending to the tides, which sometimes run strong into, or out of Palambam rivers. The banks fronting these rivers should not be approached under 10 fathoms, nor ought a ship to deepen above 12 or 14 fathoms toward Carang Bram, and Mintow Bank, on the Banca side. In the fair track, there are some small sandy spots which might alarm strangers, or be mistaken for the shoals on the Banca side, should a ship get upon them in the night; but the least water on any of them is 6 fathoms. When abreast of an island at the entrance of the False River, with a passage on each side of it appearing open, a cast of 6 fathoms may probably be got upon 1 of these spots. Another patch with 7 fathoms, bears nearly S. ½ W., distant about 6 miles from Mintow Point. When on another 7 fathoms bank, Monopin Hill bore N. 20° W., and the Fourth Point S. W. ½ S., distant about 2 leagues. From another bank of 9 fathoms, Monopin Hill bears N. by W. ½ W., and the Fourth Point S. by W. about 6 miles. The best track is about midway between the Banca

and Sumatra shores, or rather nearest to the latter, during the night, where the bank fronting the coast is safe to approach to 9 or 10 fathoms, if the lead is kept briskly going.

Steering about N. W. by W. for Batacarang Point, the depths will probably increase to 15 or 16 fathoms to the S. Westward of Mintow Point, and decrease as the western shore and Batacarang Point is approached. Before Monopin Hill is brought to bear East, a ship ought to borrow toward the edge of the Sumatra Bank to 8 or 9 fathoms, and when the hill bears between E. by S. and E. S. E. ¼ S., she must keep as near as possible in 6½ and 7 fathoms mud, on the edge of the bank projecting from Batacarang Point, in order to avoid the Frederic Hendric Rocks. With a working wind, a ship should not deepen above 7½ or 8 fathoms, toward these rocks; but she may stand on the western tack, to 5 fathoms on the edge of Batacarang Bank. The channel here, is about 4 or 5 miles wide, and if a ship deepen to 10 fathoms, she will be very near the Frederic Hendric Rocks. Having brought Monopin Hill to bear E. S. E. ½ S., she will be clear of these rocks, and of the North end of Banca Strait, and may steer about N. by E. to pass between the Seven Islands and Pulo Taya, (which are high islands,) if bound into the China Sea.

When northerly winds blow from the China Sea, from October to February, the current or flood frequently sets strong to the S. E. into the North entrance of Banca Strait, for 18 hours at a time; and in the same direction to the eastward of the Island of Banca. When S. E. winds prevail, the ebb generally runs strong out of the strait, continuing longer than the flood; although the Volunteer in July, 1813, worked into the entrance of the strait with a strong current setting to the southward. In settled weather, there are 2 floods and 2 ebbs every 24 hours, but they are greatly influenced by the winds.

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## *DIRECTIONS to SAIL from the NORTHWARD, through the STRAITS of BANCA and SUNDA.*

**To enter Banca Strait from the northward, and to proceed to the Fourth and Third Points, and to the Nanka Island.**

BOUND from the NORTHWARD to BANCA STRAIT, haul in for the Sumatra Coast into 6 or 7 fathoms mud, on the edge of the bank fronting Batacarang Point, before Monopin Hill is brought to bear E. S. E. ½ S.; preserve that depth, or keep from 5½ to 7 fathoms if the wind is westerly, until the hill bear about East, which will carry you well to the westward of Frederic Hendric Rocks: steer then about S. E. by E., or as the tides render necessary, to pass in mid-channel; because, the flood running into Palambam rivers, may drift you on the banks projecting 3 or 4 miles from them, if too near the Sumatra shore; or the strong freshes from them at other times, may set you over toward the shoals adjacent to Banca. It is, therefore, imprudent for strangers to run in the night, unless the weather be very clear, and the land visible.

After leaving the bank off Batacarang Point, the depths will increase, and from 10 to 12 fathoms, are the best depths to preserve in passing the bank off Palambam rivers, and the Fourth Point. The bank to the westward of this point, being steep from 8 to 2 fathoms, it must not be approached under 10 fathoms, and the point having a mud bank projecting 3 miles from it, should be passed at 4 to 5 or 6 miles distance, in 10 or 12 fathoms, steer then about E ½ S. for the Third Point in 10 to 14 fathoms, not coming under 10 fathoms toward the bank fronting the Sumatra shore, or about 3 miles distance; and do not stand farther off than 6 or 7 miles. The Third Point may be passed at 2 or 3 miles distance, in 10 or 11 fathoms; from thence, an easterly course should be steered toward the Nanka Islands, for the deep bight betwixt the Third and Second Points being occupied by an extensive flat,

projecting about 4 miles off, you ought to keep about mid-channel in this part, or 6 miles distant from the Sumatra shore.

WHEN near the NANKA ISLANDS, a southerly course should be steered for the Second Point, known by a tree near it, very conspicuous above the others; the depths will be from 16 to 20 fathoms in this track, and the Second Point ought to be passed at 3 or 4 miles distance. From hence to the First Point, the best track is not to stand above $\frac{1}{2}$ or $\frac{2}{3}$ channel over toward Banca, to avoid the overfalls and dangers on that side; from 12 to 18 fathoms are the best depths to preserve, keeping within 5 or 6 miles of the Sumatra shore, and not borrowing nearer it than 3 miles.

From thence to the Second and First Points.

The First Point should not be rounded nearer than 3 miles, in 10 to 12 fathoms, and after passing it, the island Lucepara will be seen to the S. Eastward. From the First Point, a southerly course must be steered, keeping at least 3 miles, but not more than 4 or $4\frac{1}{2}$ miles from the Sumatra shore, in 6 to 7 fathoms soft ground, until 4 or 5 miles southward of the point; for the mud spit to the South of the First Point, projects at least 2 miles, having $5\frac{1}{2}$ fathoms close to its edge. Having proceeded about 2 leagues to the southward of the point, or before Lucepara is brought to bear S. 50° E.; a ship ought to borrow on the Sumatra shore to 3 miles distance, to give a birth to the western extremity of the dangers in the offing. This is best effected by bringing the First Point to bear N. by W. $\frac{1}{2}$ W., or if Parmasang Hills are visible, by keeping the point on with their western extremity; when Lucepara is brought to bear about S. 54° E., the highest hill may be brought on with the First Point, and continued so until the island bears about S. 60° E. Being then clear of the western extremity of the shoals in the offing, steer to the southward with the First Point bearing about N. by W. $\frac{1}{2}$ W., in one with the western extremity of Parmasang Hills, keeping about 3 miles off the coast until Lucepara bear about East; you may then edge out from the coast to the S. Eastward, taking care not to approach the island nearer than 2 leagues; and when it is brought to bear North at 3 or 4 leagues distance, you will be clear of the strait, and have $5\frac{1}{2}$ or 6 fathoms water. If hard soundings are got toward the shoals adjacent to Lucepara, haul to the westward into soft ground, in the fair channel. With a working wind, from 5 fathoms on the Sumatra side to 7 fathoms toward the shoals, are good soundings, and do not open the First Point with the West end of Parmasang Hills, nor bring the point to bear N. N. W. till Lucepara bears S. E. by E. $\frac{1}{2}$ E.

To sail from it, through the Lucepara Passage.

Proceeding from the First Point, through this narrow part of the strait, it is advisable for persons unacquainted, to keep aboat a-head sounding along the edge of the mud bank that lines the coast, the channel being only about 2 miles wide between it and the shoals in the offing, and so flat to the West and W. N. Westward of Lucepara, that ships seldom find more than 5, and sometimes only $4\frac{1}{2}$ or $4\frac{3}{4}$ fathoms, in the fair track. By keeping a boat sounding in 4 and $4\frac{1}{4}$ fathoms on the edge of the mud bank, a ship will be enabled to pass through in the proper channel, when other marks are not always discernible. It is necessary when off the First Point to borrow on the Sumatra side, for the ebb tide here, sets strong to the E. S. E., and a strong current sets in this direction out of the strait, in the latter part of the N. E. monsoon, from February to April, liable to horse a ship among the shoals to the N. W. of Lucepara.

AFTER bringing LUCEPARA to bear about N. by W. $\frac{1}{2}$ W., distant 5 leagues, the depth will increase to 6 or $6\frac{1}{2}$ fathoms, and from thence steer S. S. E. and S. by E. to avoid the shoal banks off Tree Island. As the currents are sometimes irregular, the course cannot be always depended upon, neither are the soundings very regular, for there is a 5 fathoms bank about 10 leagues S. S. Eastward of Lucepara, which some ships have mistaken in the night for the bank adjacent to the coast. In day-light, you may borrow toward the Sumatra Bank to 9 fathoms, occasionally getting a sight of the land; if the depths decrease

and from thence, to the Two Brothers.

under 9 fathoms, haul more out, and endeavour to keep in 10 or 11 fathoms, night or day; and should they increase to 12 fathoms, edge in toward the coast until you regain the depth of 10 or 11 fathoms.

Having got into about lat. 4° 40′ S., or being within 8 or 10 leagues of the Two Brothers, keep as near as possible in 9 to 10 fathoms, in order to make these islands bearing to the southward; for if the depth is more than 11 fathoms when they are first seen, you may find difficulty in passing to the westward of them with a westerly wind; more so, as the current generally sets to the S. Eastward during the westerly monsoon. Should you get in 11 fathoms, or upward, and fall to leeward of the Two Brothers, be careful to give a birth to the Brouwer's Shoals, situated to the E. N. Eastward of these islands. And if you fall in with the North Watcher, take care in working to the S. Westward, to avoid the Jason Rock, or other dangers, described in a preceding section, where directions are given for sailing from Batavia and Sunda Strait, to the Strait of Banca.

Or to Batavia.

SHIPS from BANCA STRAIT, bound to Batavia, after falling in with the North Watcher, generally steer for the South Watcher, giving a birth to the Thousand Islands in passing; and from the South Watcher, they steer direct for Batavia Road. The dangers in this track may be avoided, by attending to the directions above mentioned. The Two Brothers appear in one when viewed from the northward, and may be seen 6 or 7 leagues; some ships have nearly run into danger by mistaking Knob Hill on Sumatra for the Two Brothers, when discerned in the evening at a great distance; it is therefore, proper, to have a good sight of them, if they are to be passed in the night: and if not plainly seen before dark, it will be prudent to anchor, or keep standing off, and on, during the night, for the Shahbunder Shoal to the westward of these islands, extends a great way from the coast, and is dangerous to approach.

Caution requisite in approaching

If bound to Sunda Strait, by keeping sight of the coast, in clear weather, and preserving the depth of 9 or 9½ fathoms, on drawing near the Two Brothers, steer to pass on the West side of them, at from 1 to 3 miles distance, observing not to borrow under 9 fathoms toward the Shahbunder, or other shoals fronting the coast, nor to exceed the distance of 3 miles from the Two Brothers in passing. Should you pass them on the outside, keep within 2, or at most 3 miles of them, until they bear to the eastward of North, by which means the Brouwer's Shoals, Lynn Shoal, and Dolphin Rock, will be avoided. Having passed the Two Brothers, a South westerly course should be steered, to get in with the coast about North Island; which, with the high Zutphen Island, will be seen soon after losing sight of the Two Brothers, if the weather is clear. Betwixt the latter and North Island, you may stand toward the Sumatra shore to 8 fathoms, with a working wind; in day-light, a good mark is to tack when North Island comes on with the High Zutphen Island, you will then generally have 7½ or 8 fathoms soft ground.

or passing the Two Brothers.

To sail from thence to North Island.

From North Island, ships used formerly to steer over for St. Nicholas Point, and then along the Java Coast inside of the Button, which route is now disused, being circuitous, and the leeward side of the strait in the westerly monsoon; but during the easterly monsoon, ships ought to prefer the Java side, and pass out of the strait between Prince's Island and Crockatoa, if they do not intend to stop for a supply of water at Mew Bay: in such case, they may go out of the strait betwixt Prince's Island and Java.

Route along the Java coast disused.

If bound out in the westerly monsoon, give a birth of 1 mile to the islet and spit at the South-east end of North Island, and if not to stop to fill up your water at the Three Sisters, stand along the coast, keeping about 2 miles off shore until the Zutphen Islands are approached, and anchor in Hound's Bay, at the North part of these islands, if the day is far gone. From hence, weigh early in the morning, and although the wind be scant, you will probably reach good anchorage under Pulo Bessy, or Crockatoa, before the tide shift; which

To proceed from North Island,

in this season, generally sets to the southward and S. W., from 4 o'clock in the morning until the evening, and sometimes to the N. E., or northward, during the night.

Having weighed from Hound's Bay, or being near the northernmost Zutphen Island at day-light, pass it at $1\frac{1}{2}$ mile distant, and with the land wind, steer to pass the S. E. island, called Hout's Island, at the distance of $1\frac{1}{2}$, or not under $1\frac{1}{4}$ mile.

The indraughts between these islands, produce strong eddies, which render ships ungovernable at times, when the wind is light, and in February and March, the current or tide, sweeps round them to the S. W. and W. S. W., until past Hog Point, with a velocity of 4 and $4\frac{1}{2}$ miles per hour on the springs; this makes it necessary not to borrow too close in rounding Hout Island, to prevent being drifted upon the reef that projects a little way from it, where the Bombay was nearly wrecked.

round the Zutphen Islands, and Hog Point,

When past Hout Island, or when it bears W. N. W., steer to the W. S. Westward, so as to round Hog Point at $1\frac{1}{2}$ or 2 miles distance, where you will have strong ripplings, but no danger to be apprehended in the day time. Having rounded the rock off Hog Point, when it bears North, haul up W. N. W., and gradually to N. W., if you intend to touch at Rajah Bassa Road for water or refreshments, giving a birth to Collier's Rock, by keeping 2 or 3 miles off shore as you get to the northward. If the wind be at North, or off the land, haul nearer to the shore, but you will not get moderate depths until within 3 or 4 miles of Cocoanut Point, and you may round it in 12 to 18 fathoms, at $1\frac{1}{2}$ to 2 miles distance, then haul

to Rajah Bassa Road.

up N. N. W. and N. by W. for Rajah Bassa Road, and anchor with the peak E. N. E. or E. N. E. $\frac{1}{2}$ N., in from 12 to 14 fathoms blue mud, off shore $1\frac{1}{2}$ or 2 miles.

After getting 4 miles to the northward of Hog Point, a ship in working, may safely stand in to 12, and off shore to 20 fathoms.

The boats proceeding to Rajah Bassa for water, will perceive a ***hut*** at a small distance to the right of the river, which should be kept on the starboard bow, in order to pass in, clear of the projecting coral rocks.

To sail from Hog Point.

After rounding the Zutphen Islands and Hog Point, if not to touch at Rajah Bassa, steer for Pulo Bessy, making an allowance for the tide, which generally sets over toward Java, in this season; and as the wind prevails from westward, ships are frequently obliged to work from the Zutphen Islands out of the strait: nevertheless, if they round these islands in the morning, they generally get close to Pulo Bessy or Crockatoa, into good anchorage, before the tide shifts. The passage between the Zutphen Islands and Stroom Rock, should not be attempted in the night, as the strong tides are liable to horse a ship toward the latter, and Thwart-the-way; where deep water, and rocky bottom, render the anchorage very unsafe.

Between Pulo Bessy and Crockatoa,

In blowing weather, a ship may anchor under Crockatoa, where she will be sheltered from westerly winds: or having approached Pulo Bessy, the channel between it and Crockatoa ought to be preferred to that betwixt the latter and Prince's Island, because there is good anchorage, should calms or contrary currents make it necessary to anchor, which cannot be done in the channel to the southward of Crockatoa.

With a fair wind, keep nearly in mid-channel, and if working through with a westerly wind, stand within $2\frac{1}{2}$ miles of the islands on either side, but not nearer to the South end of Pulo Bessy than 2 miles, in order to avoid the Hindostan Rock; taking care not to bring Zee Klip, or Gap Rock, open to the southward of Keyser's Island, as directed in the section, marked "Strait of Sunda," with farther instructions relative to these channels, under the de-

out of Sunda Strait.

scriptions of their adjacent islands. When clear of Crockatoa, steer about West, which will carry you directly out of the strait, if the wind is favorable. With a westerly wind, make some short tacks toward the coast of Sumatra, borrowing on that side of the strait until you can pass clear out, well to the northward of Prince's Island; and when clear of it, steer S. Westward, to round Java Head, if bound to Europe, or to the Cape of Good Hope.

When strong winds blow into the strait with a heavy sea, it is difficult, and sometimes impossible, to beat out to the westward, by the large channels to the North of Princes

Island; but, at such times, no difficulty has been experienced, by ships which proceeded out through Prince's Strait, as Prince's Island protected them from the heavy sea until they cleared the strait.

## *GASPAR STRAITS, with SAILING DIRECTIONS; N. E. COAST of BANCA.*

GASPAR STRAITS, formed between the large islands Banca and Billiton, are named after the Spanish captain from Manilla, who passed through them in 1724; but Captain Hurle, returning from China in the English ship Macclesfield, had previously passed through them, in March, 1702. Pulo Leat, separates these straits into 2 principal branches; that to the westward, betwixt it and the S. E. part of Banca, is often called MACCLESFIELD STRAIT; and the eastern branch, situated betwixt Middle Island, and Long Island, near Billiton, is generally called CLEMENTS' STRAIT, after Captain Clements, who commanded the fleet from China, that went through this branch in July 1781. Gaspar Straits.

Many navigators, now prefer these straits to that of Banca, when returning from China late in the season, as the route by them is shorter, and the water much deeper than in the Lucepara Channel, with generally more wind. Were it not for many dangerous shoals near the water's edge, which are interspersed about these straits, they would be preferable at all times to Banca Strait; and there is less risk of small vessels encountering pirates in these straits, than to the westward of Banca.

MACCLESFIELD STRAIT, being wider and better known than Clements' Strait, is more frequented than the latter, by ships that proceed to the eastward of Banca. The South entrance is bounded on the West side by the S. E. point of Banca, called Entrance Point, situated in lat. 3° 2′ S., lon. 106° 54′ E., or 2 miles East from Batavia by chronometers, and bearing from the Two Brothers N. 21° E., distant 46 leagues. If bound through Macclesfield Strait, in the southerly monsoon, pass to the eastward of the Two Brothers, then steer for the strait, giving a birth to the Brouwer's Shoals: the soundings will generally be regular in the fair track, from 10 to 15 fathoms soft bottom. The South end of Banca, having great overfalls from 20 to 5 fathoms off it in some places, should not be approached nearer than 4½ leagues; for there is a 4½ fathoms bank in lat. 3° 19′ S., distant about 13 miles from the nearest part of Banca, and bearing South from a remarkable hummock. About 3 leagues N. N. E. and N. Eastward from this bank, there are two 5 fathoms banks, one of which bears from Entrance Point S. W. by S., and the southernmost S. 15° W.: the remarkable hummock, standing upon a *long low* point of Banca, when clear of the high land bearing N. 25° W., is a mark for both these banks. To avoid them, and the other shoal banks off this coast, keep the low land of Banca which joins the hills, sunk from the deck until Entrance Point bears N. by E.; then steer to the N. N. Eastward for the strait, observing not to bring Entrance Point to the eastward of N. by E., or N. ½ E. The Royal George, in March 1813, steering out of the strait S. W. by W., shoaled gradually to 5¼ fathoms, then tacked to the eastward with Entrance Point bearing N. by W., Rocky Point N. ½ W., and the West point of Pulo Leat N. 20° E. Macclesfield Strait. Geo. site of Entrance Point, with directions.

FAIRLIE ROCK, in lat. 3° 27′ S., lon. 107° 1′ E., bearing about S. by E. ½ E., 8½ or 9 leagues from Entrance Point, is the southernmost danger on the East side of the passage, Geo. site of Fairlie Rock.

in approaching the strait from S. Westward. This danger was discovered by the company's ship, Fairlie, at 1 A. M. 21st of April, 1813, when she grounded on it; and on examination, it was found to be a coral shoal about $\frac{1}{2}$ or $\frac{3}{4}$ of a cable's length in diameter, with only 6, 5, and 4 feet water on its centre, and overfalls of 7 fathoms to 16 fathoms rocky bottom, close to it all round.

When at anchor in $6\frac{1}{2}$ fathoms at day-light, very near the rock bearing from S. S. W. to S. W., the southernmost extreme of Banca bore N. by W. $\frac{1}{2}$ W., and Shoal Water Island N. E. by E., just in sight from the deck.

This rock was also examined by Lieut. Ross, in the company's surveying ship, Discovery, on the 5th of July, 1814, who found 8, 9, and 12 fathoms water within 50 yards of it, decreasing to $7\frac{1}{2}$ fathoms at the distance of $\frac{3}{4}$ of a mile to the S. S. Westward; the ground was soft about the rock, but sandy at a little distance all round, and the sea shewed small breakers over it at this time.

When at anchor in $7\frac{1}{4}$ fathoms, about $\frac{3}{4}$ mile from the breakers, bearing N. 25° E., Shoal Water Island bore N. $56\frac{3}{4}$° E., and by observations at noon, with 4 sextants, made the rock in lat. 3° 27′ 13″ S., lon. 107° 2′ 53″ E., or 9′ 3″ East of the island Edam, by mean of 5 chronometers agreeing within a few seconds of longitude.

To avoid this danger, in leaving Macclesfield Strait in the evening, a S. $\frac{1}{2}$ W., or S. by W. course ought to be made good, till at least 10 leagues past Entrance Point, (for in April the current was found to set to the eastward) taking care to sink Shoal Water Island from the deck of a large ship by the time it bears N. E. by E., it being the only land distinctly seen from the Fairlie Rock.

Vansittart's Shoals.

VANSITTART'S SHOALS, situated about 4 leagues E. S. Eastward from Entrance Point, (together with the last mentioned danger) render the approach to the strait very dangerous in thick weather, for although the sea breaks on several of them at low water, they are not visible when the tide is high. They consist of 9 or 10 different patches, stretching from lat. 3° 5′ to 3° 11′ S., and are 4 or $4\frac{1}{2}$ miles in breadth at the South part; to the eastward and southward of them, the soundings are irregular from 10 to 20 fathoms; on the West side, the depths near them are generally from 22 to 28 fathoms, decreasing toward Banca, the bottom mostly coarse sand, shells, and stones. For marks to avoid these shoals, it may be useful to describe briefly, the adjacent islands.

PULO LEAT, or Middle Island, in lat. 2° 51$\frac{1}{2}$′ S. the West end, is the principal island which separates Macclesfield Strait from Clements' Strait, and has several hills upon it, making it appear like different islands when first seen, and it is of considerable size.

Islands contiguous to the straits.

LONG ISLAND, about 6 leagues to the eastward of Middle Island, and contiguous to the West coast of Billiton, bounds Clements' Strait on the East side; it is of considerable extent, with several islets and dangers around. To the southward of the latter, there is a group of low islands, and another long low island close to the S. W. end of Billiton. The other islands which lie to the S. Eastward of Middle Island, form the South entrance of Clements' Strait, and have been named from their situation and aspect as follows. Sandy Island, about 5 miles S. S. E. from the South end of Middle Island, is small and low, and about $1\frac{1}{2}$ mile E. by N. from it, lies Barn Island. South Island, about 6 miles E. by S. from Barn Island, is in lat. 3° 0′ S., and North Island bears from South Island North, about 2 miles. Table Island, bears about E. $\frac{1}{2}$ S., distant 3 miles from South Island. The proper channel into Clements' Strait, is bounded by these 3 islands on the East side, and by Barn Island and Saddle Island to the westward. Saddle Island, named from 2 hills on it, is about 3 miles to the S. E. of Barn Island, and 4 miles from South Island, with Low Island about a mile to the westward.

SHOAL WATER ISLAND, in about lat. 3° 20′ S., are 2 small islands close together, bearing South westerly, about 7 leagues from South Island; they are surrounded by a shoal, and other shoals project nearly 4 leagues to the southward, with breakers on them, and are partly dry at low water.

If bound into Macclesfield Strait from the southward, to avoid the Fairlie Rock, steer for the S. E. part of Banca, and having brought Entrance Point to bear about N. ½ E. or North, steer N. by E. and N. N. E. for the strait: with a working wind, to avoid Vansittart's Shoals, do not bring Entrance Point to the westward of N. W. ½ N., until the Peak of Saddle Island bears N. E. by E., or by keeping Middle Island a little to the eastward of North, they will be avoided. When near the N. W. part of these shoals, the West end of Middle Island may be brought N. ½ W.; but not more westerly until South Island is open to the northward of Saddle, and Low Islands; with the northern extremes of these, and the South part of South Island in one bearing E. 19° N., is just clear of the northernmost shoals. The S. Eastern extremity of Vansittart's Shoals, bears S. 4½° W. from Barn Island, and N. 33° W. from Shoal Water Island. The S. Western extremity of them bears S. 26° W. from Barn Island, and N. 48° W. from Shoal Water Island. To avoid the Vansittart's Shoals,

Having entered the channel betwixt Entrance Point and these shoals, which is about 3 leagues wide, a course should be steered for the small Island at the West point of Middle Island, to avoid the dangers contiguous to the Banca shore. One of these is a bank to the northward of Entrance Point, but the Reefs off Rocky Point are most in the way of ships, particularly the following danger situated nearly in mid-channel. and enter Macclesfield Strait.

DISCOVERY ROCK, on which a Portuguese ship from Macoa was wrecked in 1816, and the Alnwick Castle narrowly escaped, by tacking on the edge of it in 5¾ fathoms, in 1810; but its existence was not known, until Lieut. Ross explored it in the company's surveying ship, Discovery, on the 18th of January, 1813, and of which he gives the following description. Discovery Rock.

I once before passed very near the situation of this rock, without perceiving any indication of danger; but while passing at this time, I observed a breaker, at low water spring tide, which on examination, was found to be on a sunken coral rock, in diameter about 30 yards, having only 2 feet water upon it, with perpendicular sides, as within a boat's length of it, there is 7 fathoms water.

Although there was so little water over the rock, and a small swell at this time, yet the sea did not break upon it above once in an hour. The depth about the rock is 20 fathoms, but a rocky bank or ridge projects from it to the eastward about a ¼ mile, with 6, 7, 10, and 15 fathoms on its eastern extremity.

From the rock, Entrance Point bears S. 17° W., *False* Rocky Point (which is situated between the *True* Rocky Point and Entrance Point) S. 22° 51′ W., Saddle Island S. 59° 36′ E., South point of Pulo Leat or Middle Island S. 80° 46′ E., Highest Tuft of Trees on Pulo Leat N. 89° 39′ E., North end of Pulo Leat N. 59° 39′ E., Hummock over Tanjong Brekat N. 18° 30′ E., and it is distant 4 miles from the small island that lies close to the West point of Pulo Leat, and 4 miles from Rocky Point.

ROCKY POINT, is about 2 leagues to the northward of Entrance Point, from which *clusters of rocks*, with gaps of deep water of 8 and 10 fathoms between them, stretch out to N. Eastward nearly 3 miles; they are of considerable extent, covered at high water, but at low tide, many of the rocks are visible. It is advisable to approach them no nearer than 16 fathoms, for the Warren Hastings struck on 1 of them with Entrance Point bearing S S. W., and the North extreme of the 3 islands to the N. W. of Rocky Point N. W. by W. ½ W., having shoaled from 15 fathoms to 4 fathoms at 1 cast of the lead. Rocky Point.

In passing the eastern extremity of these rocks, Entrance Point should not be brought to To pass clear of the reefs off it.

the southward of S. 31° W., until abreast of the West point of Pulo Leat, where the soundings are generally from 20 to 28 fathoms, if not too near the Discovery Rock, and decreasing to either side. The small island off the West point of Pulo Leat is joined to it by a reef, which should have a birth of 1 or 2 miles in passing, but not more than 2 or 2½ miles, in order to avoid the Discovery Rock; and from the North point of Pulo Leat, a reef projects to the northward, and another to the westward about 1½ mile. A ship will clear the latter, if the West point of the small Island contiguous to Pulo Leat, is not brought to the westward of S. 7° W.

Tanjong Brekat; and to avoid the shoal near it.

TANJONG BREKAT, in lat. 2° 36′ S.; a long projecting point with a hummock over it, is about 7 leagues nearly N. ½ W. from Rocky Point; the coast of Banca between these points, forms a very deep and extensive bay, having in it shoal water and several dangers, with 3 islands already mentioned, at the southern part. About 4 miles to the S. S. E. of Tanjong Brekat, lies a 3 fathoms bank which must be avoided, and borrow not into the bay, in passing from Pulo Leat to the northward. About 4 leagues inland to the westward of Tanjong Brekat, there is a mountain on Banca, very conspicuous.

Geo. site of Gaspar Island.

PULO GLASSA, or GASPAR ISLAND, in lat. 2° 25½′ S., lon. 107° 6′ E., or 14 miles East from Batavia by chronometers, bears North from the East part of Pulo Leat, distant 8 leagues, and lies about 5½ leagues N. E. by E. from Tanjong Brekat. It is the principal mark in sailing to, or from the northern part of these straits, for avoiding the shoals, having a peaked hill on it, that may be seen about 10 leagues. There is a rock or islet with some trees on it, distant about 1½ or 2 miles from the West side of Gaspar Island, which is on with the peak bearing E. 5° S.

Tree Island.

TREE ISLAND,* bearing from Gaspar Peak W. 28° S. distant 7 miles, is a barren rock with 2 or 3 trees on its summit, giving it the appearance of a ship under sail, and making it visible about 5 leagues. A reef extends to the North and southward from it about ½ a mile, and a rock about the height of a long boat, lies the same distance from it to the S. Eastward.

Tides.

There appears to be a great rise and fall of tide, sometimes at these islands, for the Vansittart's boat landed at Tree Island, and found a rise of about 3 fathoms perpendicular, between 8 A. M. and 5 P. M.; and it appeared to be high water at 5 or 6 o'clock in the evening, the moon then 1½ day past change. During the strength of the N. E. monsoon, in the China sea, the winds betwixt Banca and the S. W. part of Borneo, generally prevail from N. Westward; and the current sets then along the East coast of Banca through Gaspar Straits to the S. Eastward, sometimes from 2 to 3 miles per hour. In fine weather, and light winds, a kind of tides are experienced in the straits, which are seldom very regular.

To steer from Pulo Leat through the Strait.

Being in Macclesfield Strait, abreast of the small island at the West point of Pulo Leat, at 1½ to 2½ miles distance, steer about North, observing not to bring Tanjong Brekat to the northward of N. N. W. ½ W., nor to shoal under 14 or 15 fathoms in the entrance of the great bay between it and Rocky Point. When Tree Island is seen, steer to pass to the eastward of it and Gasper Island, at any convenient distance from 2 or 3, to 5 or 6 miles; then steer to the northward, observing not to bring Gaspar Island to the eastward of South while it is visible, in order to avoid the following shoals, which render the passage to the westward of these islands intricate; whereas, the passage to the eastward of Gaspar Island is now generally chosen, being thought free of danger from that island across to the isles which lie off the N. W. end of Billiton.

* There is a cave here, where the Malays come to collect birds nests, which they also probably find on the other Islands.

WARREN HASTINGS SHOAL, is about 2 miles in extent, nearly N. by W. and S. by E., with only 1½ fathom on it in some places: the Warren Hastings, when aground on a projecting part at its eastern edge, had the high land of Banca bearing S. 58° W., South extreme of Banca, or Tanjong Brekat S. 22° W., centre of Gaspar Island E. 20° S. and Tree Island S. 17° E. distant about 7 miles. To avoid this shoal on the West side, if passing between it and Banca, Tree Island must be kept to the eastward of S. S. E., when Gaspar Island bears from E. by S. to E. S. E., or until at least 3½ leagues to the N. Westward of Tree Island. Another good mark is, to steer to the northward, with Tanjong Brekat bearing between South and S. by W., and not bring it to the westward of the latter bearing, when passing the shoal. Having passed to the westward of the Warren Hastings Shoal, steer a North course from Tanjong Brekat, to pass betwixt the Vansittart's Shoal,* (on which the ship of that name was lost) and the Belvidere's Shoals. Warren Hastings Shoal.

BELVIDERE'S SHOALS, the S. W. end is in lat. 2° 15′ S., and bears from Gaspar Island Peak N. 27° W., distant about 12 or 13 miles; they extend from thence, to the N. Eastward about 4 miles, being composed of several coral patches, with from 6 to 10 feet water on them, and a rock above water at the N. Eastern extremity. The sea breaks on them when there is much swell, and they may be easily avoided in day-light, with a good look out. An American ship, however, belonging to Mr. Astor of New York, was wrecked on these shoals last year. Belvidere's Shoals.

VANSITTART'S SHOAL, in lat. 2° 11′ S., bears from Gaspar Island Peak N. 56° W., distant 25 miles, and 5 leagues to the westward of the Belvidere's Shoals; it is composed of coral rock and very dangerous, because, the depths being 3 and 3½ fathoms on it, the water is not always discoloured; consequently, the danger is not visible. Vansittart's Shoal.

To pass betwixt the Belvidere's Shoals and the Vansittart's Shoal, when Gaspar Island is visible, the Peak kept between S. E. by S. and S. E. ½ E., will guide you safely through; afterward, steer between N. W. by N. and N. N. W., to avoid several other dangers near Banca, and the Magdalen's Shoal to the eastward. These shoals to the northward and N. Westward of Gaspar Island, are mostly all steep to, having from 17 to 20 fathoms water close to their edges, and nearly the same depths in the channels between them; but in approaching the shoals adjacent to Banca, the water *generally* shoals to 12 or 14 fathoms, rocky bottom; you ought, therefore, not to borrow under 14 or 15 fathoms toward Banca,† after having passed Gaspar Island, if the passage to the westward of the outer shoals is followed; which is not advisable, when that to the eastward of them and Gaspar Island is known to be wide and safe. Directions.

MAGDALEN'S SHOAL, discovered by Captain John Cowman, on the 24th of November, 1806, on his passage from China toward New York, in the American ship Magdalen, is the outermost shoal discovered to the northward of Gaspar Straits, and greatly in the way of ships coming from the northward in thick weather toward the straits. He was within ½ a cable's length of the shoal before it was perceived, which was found to consist of 2 Magdalen's Shoal.

* The Vansittart was lost by striking on this shoal, after having nearly completed a survey of Macclesfield Strait, on her passage toward China, in 1789: since Captain L. Wilson made that survey, 2 other dangers have been discovered farther to the northward; which render the passage West of Gaspar Island, dangerous in thick weather; and it is not improbable, that 1 or 2 more undiscovered shoals, may exist in this dangerous sea to the eastward of Banca.

† Although this caution has been hitherto thought necessary, Captain Robert Scott, states, that in the ship Warren Hastings, he hauled in with the coast of Banca a little to the northward of Tanjong Brekat, then coasted along to the northward, keeping generally in 11 fathoms water, without perceiving any appearance of shoals, nor any danger except contiguous to the shore, although a constant look out was kept at the mast-head. There are, however, dangers in 12 or 13 fathoms, to the northward of Pulo Panjang, and off Tanjang Ryah, shortly to be described.

patches of coral rock, about 80 fathoms in length, and 15 fathoms in breadth, with deep water between them. The boat found 12 feet water upon them, but in some parts, there may be less. About ½ a cable's length from the shoal, they had 19, 20, and 21 fathoms water; being noon at the time, the observed lat. was 1° 56½′ S., the summit of Gaspar Island Peak then in sight from the deck, bearing S. 10° E., distant 10½ leagues. By keeping Gaspar Peak S. ½ E. or South, the shoal will be left to the westward in passing, but Gaspar Peak will not be discernible from the shoal unless the weather is clear. On the 13th of July, 1814, Lieutenant Ross, endeavoured to find this shoal, without success, the weather was thick, and no discoloured water could be discerned to indicate a shoal in the situation assigned to it; he therefore, thinks it must be a very small spot, or the lat. assigned to it cannot be perfectly correct.

Severn's Shoal.

SEVERN'S SHOAL, discovered by Captain John Whetton, in the American ship Severn, from New York, on the 23d of May, 1802, is much in the way of ships running from Pulo Toty toward Gaspar Island, and is the northernmost of the discovered shoals off the East coast of Banca. At sun-set, Gaspar Peak bore S. E. ¾ S., distant 4½ or 5 leagues; from this situation they steered N. W. ½ N., 35 miles to day-light, then struck on a coral shoal, and got off it on the following flood, after lightning the ship of 30 tons of ballast, and carrying out a bower anchor. The shoal appeared to extend N. N. E. and S. S. W., about 2 or 3 miles, and on that part where the ship grounded, there was only 10 feet on a rock, which was the least water they found. When aground, lat. observed 1° 40′ S., and the hills on Banca appeared detached from each other, like islands, bearing from S. W. by S. ¼ S. to S. W. by W.; the mountain Goonong Marass was seen inland beyond the other hills, and the nearest land seemed distant about 7 leagues from the shoal.

Other shoals near Banca.

OTHER SHOALS, whose positions are not *correctly* known, lie nearer to the coast of Banca than those last mentioned, which are avoided by not coming under 16 fathoms; the bottom in such case, will be mostly mud, but generally foul and rocky under 15 fathoms. The Sulivan, from China, hauling in to get a sight of Banca, on the 25th of December, 1784, during thick weather, after shoaling to 13½ fathoms rocky bottom, saw 3 shoals with breakers, one bearing S. S. W. 3 miles, one S. E. by S. 3 miles, and another E. N. E. about 4 miles; there appeared amongst the breakers, some rocks above water. These dangers seem to be about 4 leagues off Banca, and in about lat. 2° 3′ S., a little to the northward of Pulo Panjang;* but the weather being very thick, the land was not seen at the time the shoals were visible.

The Hillsborough, returning from China, toward Macclesfield Strait, by keeping too close to the coast of Banca, struck upon a rock at 4 P. M., on the 27th of March, 1788, having only 3 feet water on the shoalest part; and when the ship was aground forward, there was 13 fathoms at the main chains on both sides. After getting off, she anchored in 14 fathoms a little to the westward of the reef, extremes of Banca from W. N. W. to S. E., 5 small islands bearing South, and the lat. about 2° 3′ S.; the boat on the South end of the reef, bore from the ship about S. E., and when on the other end, about N. E.

The 5 islands bearing South from the ship, when at anchor near the reef, must have been Pulo Panjang, the islet near it, and 3 others at a little distance to the South-eastward; it seems, therefore, very probable, that the reef on which this ship struck, was 1 of those seen in the Sulivan; and if not the same as those encountered by the General Elliot, it must be situated very near them.

* With the small island off Pulo Panjang bearing S. by W. ¼ W., 5 miles distant, and the eastern extreme of Banca S. S. E. ½ E., being the toe of the mountain over Tanjong Brekat, the General Elliot got entangled with shoals, and had 8 fathoms close to them, in the situation described above; as the Sulivan had deeper water, the shoals seen by her, may be others at a greater distance from the coast, although they are probably the same, and do not lie so far off shore as mentioned above.

A little farther to the northward, about 4 leagues off Banca, in lat. 1° 55′ S., there is a patch with overfalls from 13 to 7 fathoms, and *probably less* water, over which the General Elliot passed.

Palmer's Shoal.

The last mentioned bank, seems to be that called PALMER'S SHOAL, and the following description of it, is given by Capt. Roddam of the ship Palmer. August 27th, 1811, at 45 minutes P. M. the ship suddenly struck, having sounded about 5 minutes before in 14 fathoms; saw discoloured water on both sides under the quarters, had then 10 fathoms by the lead, the ship having passed rapidly over the shoal; next cast, had 11, 10, 11 fathoms, then anchored, the wind blowing fresh from S. E. against us. When at anchor, Tanjong Ryah bore W. N. W. distant about 5 leagues, the southernmost low islands of Pulo Panjang S. S. W. ¾ W. distant 12 or 14 miles, the shoal on which we struck bearing about N. N. E. 2½ miles, according to the distance run until anchoring.

N. E. Coast of Banca,

N. E. COAST of BANCA, being little known, it may be proper here, to describe it briefly. There are many hills interspersed along this coast, near the sea, and some mountains inland; 1 of the former, is about 4 leagues West from Tanjong Brekat; and about 6 leagues to the westward of Tanjong Ryah, in lat. 1° 53′ S., lon. 105° 52′ E., stands the double peaked mountain, Goonong Marass, the largest on the North part of Banca. Pulo Panjang, in lat. 2° 9′ S., is about 2 leagues off shore, surrounded with reefs, having a small island near it, and others to the S. Eastward; and opposite to it, on the Banca shore, there is a river, where Marawan, a place for tin, is situated, which cannot be approached by ships on account of surrounding dangers. A brig sent lately from Mintow to Marawan for tin, got entangled by the numerous shoals, near that place, and grounded on 1 of them, although she had a Malay pilot on board, which obliged her to lie near Pulo Panjang, distant about 10 miles from Marawan, where she took in tin.

Geo. site of Goonong Marass.

Pulo Panjang.

Marawan.

Geo. site of Tanjong Ryah.

TANJONG RYAH, in lat. 1° 55′ S., lon. 106° 14′ E., bearing from Tanjong Brekat nearly N. W. distant about 19 leagues, has 2 hummocks on it, and the coast between these headlands forms a concavity, with several islands in it, and the dangers already mentioned.

Black Rock Reef.

Black Rock Reef, situated 4 or 5 miles to the South and S. S. Eastward of Tanjong Ryah, is very extensive, with only 3 feet water, rocky bottom in some places; but there are also rocks above water on it about 14 feet high. This shoal, and also the reef fronting Tanjong Ryah, have 9 and 10 fathoms water close to them, both of which were examined by Captain Waterman, when he anchored in Songy Leat Bay in July, 1813, in the ship Volunteer. From the highest rock of Black Rock Reef, Goonong Marass was open to the southward of Tanjong Ryah Hills bearing W. 7° N., easternmost hill of Tanjong Ryah N. 53° W., Tanjong Tuan N. 30° W., Songy Leat Bay S. E. extreme N. 39° W., Inner Pulo Panjang S. 12° E., Outer ditto S. 22° E.

Songy Leat,

SONGY LEAT BAY, in lat. 1° 50′ S., situated to the N. W. of Tanjong Ryah, has good anchorage, and shelter from southerly winds. The Volunteer, at anchor in 5 fathoms white stiff clay, about ¾ of a mile from the shore, had Goonong Marass bearing W. 6° S., the North point of the Bay and Tanjong Tuan in one N. N. W., Tanjong Ryah Point S. E. ½ S., and Songy Leat River W. ¼ N.

Fresh water is difficult to be got here, as boats can only enter the river when the tide is high: wood may be cut close to the beach; and spars of any dimensions may be got with little difficulty, in the South part of the bay, within ½ a mile of the shore. From the river nearly to S. E. point of the bay, a fine sandy beach lines the shore, the soundings decreasing gradually toward it, over a clear bottom; this bay and the adjacent coast abounds with fine fish. The tide rises 9 feet at full and change of the moon, and flows till 5 P. M. only once in 24 hours.

and other places. The coast about Pulo Panjang, and from thence to Songy Leat Bay, is dangerous to approach too close, but from the latter place to Tanjong Muncooda, it is clear, and from thence westerly near to Clabat Bay, where it becomes dangerous at the East part of this bay, near the islands at its entrance.

Tanjong Tuan, in lat. 1° 38′ S., has a hill on it with several others inland, and may be approached within ½ a mile; it bears from Tanjong Ryah nearly N. N. W. ½ W., about 6 leagues, the coast to the South of it forming a bay, and Pulo Simbang, a small island, lies about 2 leagues S. Eastward from Tanjong Tuan.

Tanjong Muncooda in lat. 1° 28½′ S., is the northernmost point of Banca, and bears from Tanjong Tuan about N. W. by W. 5 or 6 leagues, and has a small island near it, called Pulo Muncooda. About 3 leagues W. by S., lies the entrance of Clabat or Calabat Bay, having several islands in it, and Pulo Punyosoo close to Tanjong Punyosoo, the point that bounds the East side of the entrance. The bottom of Calabat Bay, is said to communicate with an extensive Lagoon inland, in which there is 16 fathoms water. Country ships anchor

Anchorage at Calabat Bay. to procure tin, at the entrance of the bay, in 9½ or 10 fathoms, about 2 miles from Pulo Punyosoo, on with Goonong Marass, bearing S. 28° E., Goonong Calabat S. 28° W., Tanjong Malaloo, the West point of the bay, W. 15° S., the hill over it called Goonong Malaloo W. 20° S., and Pulo Muncooda E. 7° N.

Tanjong Goonting, in lat. 1° 43′ S., forms the North Point of Songy Booloo Bay, and is on with Monopin Hill, bearing S. 22° W.: it is about 6½ leagues to the S. Westward of the West point of Calabat Bay, and between them, there are several other points, also 2 islands,

Several rocks and islands. called Pulo Pamooja, and Pulo Proute; and 2 rocks, called Carang-Malan-Toole, and Carang-Malan-Dooyong, which lie about a league off shore.

Carang-Malan-Dooyong, the easternmost of these rocks, is the largest, being as high as a small vessel's hull, and bears W. 28° N. from the West point of Calabat Bay, distant 4 or 5 miles; and when on with Goonong Marass and a little hill, it bears S. 35° E.

Carang-Malan-Toole, about the height of a boat above water, is 3 or 4 miles off shore, and about the same distance W. 17° S. from the rock last mentioned, and bears from Pulo Proute N. 6° E. Nearer the shore, lies another rock called Carang-Malan-Goonting, which bears from Pulo Proute E. 18° N., and from Carang-Malan-Dooyong W. 12° S.

Anchorage to the eastward of them. The soundings about 2 or 3 miles outside of these rocks, vary from 17 to 26 fathoms, and they are steep to, but a ship may anchor to the eastward of them, off Tanjong Malaloo in 13 fathoms, with that point S. 61° W., Pulo Proute S. 66° W., Caran-Malan-Dooyong W. 3° S., Carang-Malan-Toole W. 18° S., and Carang-Malan-Goonting W. 20° S.

Songy Booloo SONGY BOOLOO, bearing S. 65° E., about 5 miles from Tanjong Goonting, is the principal town near the North end of Banca, and frequented by the country traders: the bay is about 4 leagues in extent from Tanjong Goonting to Tanjong Beeat, but occupied by shoal water to the distance of 3 miles from the shore.

Ships in want of water, may anchor under Tanjong Goonting in 5 or 6 fathoms, with it bearing N. 18° E., the S. W. extreme of the bay, (a long low point) S. 32° W., Songy Booloo S. 83° E., and the watering place which is about 1½ mile inside of Tanjong Goonting, N. 61° E. Or a ship may anchor in 5 fathoms, abreast of Songy Booloo, bearing N. 52° E., Tanjong Goonting N. 20° W., Monopin Hill S. 33° W., and Tanjong Beeat the westernmost extreme S. 49° W., off shore about 3 miles.

To sail through the Middle Passage of Gaspar Straits. MIDDLE PASSAGE, formed between Macclesfield and Clement's Straits, has formerly been adopted by several ships which proceeded betwixt Banca and Billiton; but it is now little frequented, being more intricate than Macclesfield Strait. A ship intending to proceed through it, should, in coming from S. Westward, steer betwixt Entrance Point and Vansittart's Shoals, toward Middle Island, borrowing on the East side of the channel until

Sandy Island is approached. There are 2 shoals between Barn Island and the S. E. part of Middle Island, and a passage nearly in mid-channel, by leaving a shoal on each side; but the best passage is to the eastward of them: a ship ought, therefore, to keep within a mile of the West side of Sandy Island, and bring it to bear S. W. by S.; by keeping it on this bearing, but nothing to the southward, she will pass clear to the eastward of the outer-shoal, which will be easily discerned by the discoloured water. Having passed this shoal, a northerly course should be steered, keeping at least a league from the East side of Middle Island; if the weather is clear, Gaspar Island will soon be seen bearing about N. by.W., which should be passed on the East side at the distance of 3 to 5 or 6 miles. Whilst Gaspar Island is visible, do not bring it to the eastward of South, which will carry a ship in the fair channel to the eastward of the Magdalen's Shoal. Being clear of the latter, by sinking Gaspar Island under the horizon, if the weather is clear, or getting into lat. 1° 50′ S., a direct course about N. N. W. may be steered, if bound into the China Sea, to pass between Pulo Aor and Pulo Domar, the latter bearing from Gaspar Island N. 19° W., distant 110 leagues. The depths in this track, will increase from 18 and 20 fathoms near Gaspar Island and the adjacent shoals, to 26 or 28 fathoms eastward of Pulo Lingin, and to 30 or 34 fathoms, as Pulo Aor, or Pulo Domar is approached.

and from thence into the China Sea.

CLEMENT'S STRAIT, may be adopted occasionally, if winds or other circumstances favor the passage through it, in preference to that through Macclesfield Strait; which probably, will seldom be experienced. Should a ship, however, coming from the southward intend to proceed through Clement's Strait, she ought to steer up to the westward of Shoal-Water-Island and the shoals to the southward of it, giving them a birth of 3 or 4 miles in passing: when clear of that island, to avoid the S. Eastern extremity of the Vansittart's Shoals, she must haul to the eastward until the peak of Saddle Island bears N. by E., then steer for it, and pass mid-channel betwixt it and South Island.

Directions for sailing through Clements' Strait.

There is a good channel about 3 miles wide, betwixt the N. E. end of Vansittart's Shoals and Low Island, through which a ship may proceed into Macclesfield Strait, or Middle Passage, if circumstances should render that necessary; and in such case, she may pass to the westward of Low Island, giving it a birth of 2 miles. But to proceed through Clements' Strait, after passing about mid-channel betwixt Saddle Island and South Island, a course about North will be proper, to pass midway between Barn Island and North Island, or rather nearest to the latter; this track is requisite to avoid a sunken rock about 6 or 8 fathoms in diameter, having only 1½ fathom water upon it, and 8 to 10 fathoms all round. Saddle Island bears from it S. by W. ¼ W. 3 or 4 miles, North Island E. by N. about the same distance, Barn Island W. by S., and it lies nearly North from the reef that stretches about 1½ mile eastward of Saddle Island. Having passed through this narrow part of the strait, with North Island bearing East or E. by S., a direct course may be steered to pass on the East side of Gaspar Island, if bound into the China Sea; or to the N. Eastward, if bound to the coast of Borneo, taking care to give a birth of at least 2 leagues to the N. W. coast of Billiton, as sunken rocks are interspersed throughout Treacherous Bay, which is situated between Long Island and the group of islands at the N. W. end of Billiton.

Excepting Macclesfield Strait, Clements' Strait is the best and widest passage amongst the islands which lie between the S. E. point of Banca and Billiton; there being no known dangers in it besides those already mentioned, if a ship keep in the fair channel, where the depths are generally from 16 to 20 fathoms.

If coming from the East, and bound to the northward through any of the straits of Gaspar, steer to make SHOE ISLAND, situated in lat. 3° 47½′ S., lon. 108° 2′ E. by chronometers from Batavia: from thence, steer N. W. which will lead you betwixt Shoal-Water-Island and a *long low island* off the S. W. part of Billiton, where the water will deepen to 22 and 24 fathoms sandy bottom. Should you make the S. E. part of Billiton, coast along in 11

Geo. site of Shoe Island.

or 12 fathoms until Shoal-Water Island is seen bearing about West, 4 leagues distant; the water will then deepen, and when Saddle Island is discerned to the N. N. W., steer to pass midway between it and South Island, if bound through Clements' Strait; but if Macclesfield Strait is to be chosen, steer a little more westerly, to pass betwixt the North end of the Vansittart's Shoals and Low, and Sandy Islands, keeping within 2 or 3 miles of the west sides of these islands in passing, then steer near the West side of Pulo Leat, conforming to the directions in the beginning of this section, for proceeding through Macclesfield Strait. It is sometimes very difficult to get to the northward through any of these straits in the northerly monsoon, and even so late as March, calms and faint airs, with a constant southerly current have been known to prevent ships from making any progress to the northward, and obliged them to lie at anchor for several days together. At this season it is improper to attempt the passage to the northward, through any of these straits; in a small ship, the passage close along the West coast of Borneo ought to be prefered.

Geo. site of Pulo Toty; and directions to sail from the northward through Macclesfield Strait, in the northerly monsoon.

SHIPS from CHINA, intending to proceed through Gaspar Straits, may proceed by the westernmost 1, called Macclesfield Strait, if not very late in the season; and it *probably* ought to be chosen as the best at all times.

Departing from Pulo Domar, a course should be steered for Pulo Toty, in lat. 0° 58′ S., lon. 105° 42′ E., bearing from Pulo Domar, S. 6° E. distant 75 leagues, or 23 miles E. from the latter by chronometer; if a southerly current is experienced after leaving Pulo Domar, it will probably set to the S. Eastward, as the distance is increased to the South of the equator, for which make allowance in thick weather, when observations are not obtained, or when the wind draws to N. Westward. Pulo Docan bears nearly S. W. by W. about 3 leagues from Pulo Toty, and the depths are from 20 to 15 fathoms mud, in a safe channel between them; but pass to the East of Pulo Toty at 4 to 6 leagues distance, or even farther, if the wind incline from N. Eastward.

Having passed Pulo Toty, from which Gaspar Island bears S. 44° E. distant 40 leagues, steer an E. S. Easterly course, to get on the meridian of the latter Island before you get into lat. 1° 50′ S. in order to pass to the East of the Magdalen's Shoal, and all the dangers adjacent to the coast of Banca, by entering the straits on the East side of Gaspar Island: afterward, haul to the S. Westward, to pass on the West side of Pulo Leat within 1½ or 2 miles, to avoid the Discovery Rock.

The foregoing directions, are only applicable to ships which come from China very early in the season, when N. Westerly winds sometimes prevail; but the best route to pursue, in general, particularly in the latter part of the northerly monsoon, when S. E. and Easterly winds are often experienced between Banca and Billiton, is to steer for the North Natunas if not certain of your longitude, and pass 5 or 6 leagues to the westward of them, and the islands which lie off the western part of the Great Natuna, in order to give a birth to 2 shoals that lie from 2 to 3½ leagues S. S. Westerly from N. W. Island: from hence, steer to pass to the West of Haycock Island, to avoid Diana's Shoal, and proceed to the southward, leaving Victory and Barren Islands to the West, and Camel Island, St. Julian, and St. Esprit Islands to the eastward, if the wind admit; otherwise, you may pass through the most convenient channel between these islands, which are all thought to be safe, with soundings from 20 to 35 fathoms. Having passed the St. Esprit Islands, steer to fall in with Gaspar Island bearing to the S. Westward, taking care to get to the East of its meridian before you pass the Magdalen's Shoal; the soundings in this track are generally from 20 to 27 fathoms. When Gaspar Island is discerned bearing from South to S. W., steer to pass it on the East side at a convenient distance, and pass Pulo Leat on the West side within 1 or 2 miles, nor stand farther than 2½ miles at most from it in working, when abreast of the Discovery Shoal.

Having brought the West point of Pulo Leat to bear N. by E., steer out of the strait with this bearing, or in working, it may be kept between North and N. by E. ½ E. If working

out between Vansittart's Shoals, and the shoal patches off the South end of Banca, Entrance Point must be kept between N. ½ E. and N. W. by N., or that point bearing North to N. by W., is a safe guide with a leading wind. With either of these marks, steer S. by W. until the low land that joins the hills on Banca, is sunk under the horizon; and to avoid the Fairlie Rock, sink Shoal Water Island by the time it bears N. E. by E., observing that Entrance Point must not bear to the westward of N. by W., when the distance from it is increased to 8 leagues. When this point is distant 5½ or 6 leagues, bearing to the northward, a direct course may be steered to fall in with the Two Brothers, if N. Westerly winds prevail; but it will be prudent to make the North Watcher, when the winds are S. Easterly.

Proceeding through Macclesfield Strait, when S. E. winds predominate, borrow near to Pulo Leat and the East side of the channel, to be enabled to pass clear out, without falling to leeward upon the shoal banks and overfalls projecting from the South end of Banca. The soundings in the strait, are generally 17 and 18 fathoms in mid-channel, increasing abreast of the West point of Pulo Leat to 24 or 28 fathoms; from thence, the depths decrease to 12 and 11 fathoms, in passing out of the strait to the southward of Entrance Point. The bottom in many places is mud, but often it consists of coarse sand, shells and stones, and in some places rocky, particularly near the shoals on the Banca side. About 1½ mile westward from the small island adjoining to the West Point of Pulo Leat, the bottom is also rocky and improper for anchorage.

To sail from the northward through Clements Strait late in the season.

RETURNING FROM CHINA, very late in the season, S. S. Westerly winds in the southern part of the China sea, are liable to set you over to the eastward amongst the islands adjacent to the coast of Borneo. Should this happen so late as June, it would be tedious getting to the southward; in such case, you may steer for the N. W. end of Billiton, and pass through Clements' Strait. The island of Billiton is high uneven land, and its coasts, which have never been well explored, are lined with many dangers, and islands of various sizes. The outermost island of the group, adjoining to the N. W. end of Billiton, is in lat. 2° 35′ S., and bears nearly S. W. ½ S. from the island Souroutou, distant about 23 leagues.

Having approached the N. W. end of Billiton, (which may be seen about 8 leagues) give a birth of 4 or 5 miles to the group of islands contiguous to it, and a direct course must be steered to the S. W., to pass the N. W. end of Long Island about the same distance; for TREACHEROUS BAY, fronting the coast of Billiton is very dangerous, having many sunken rocks at 4 and 5 miles distance from the shore, and the coast is barren and destitute of fresh water. The fleet under Captain Clements, went into this bay in search of fresh water, in July, 1781; and the Mansfield and Pigot both struck, and lay some time upon the sunken rocks, N. W. Island then bearing N. 20° E. 6 or 7 miles, outer extreme of Long Island S. 50° W., Gaspar Island N. 67° W., off Billiton 4 or 5 miles.

After passing the N. W. end of Long Island, a S. S. Westerly course should be followed toward North Island, then a southerly one, to pass to the westward of North and South Islands, nearly in mid-channel, betwixt them and Saddle Island. When through the channel between these islands, continue a southerly course, taking care not to bring Saddle Island to the eastward of N. by E., until you are 10 or 11 miles to the southward of it, in order to avoid the S. E. angle of Vansittart's Shoals, then steer westerly to give a birth to Shoal Water Island and the shoals to the South of it, and particularly to Fairlie Rock, by leaving all these dangers to the S. Eastward; when clear of them, steer a direct course to fall in with the North Watcher.

PARTICULAR INSTRUCTIONS for sailing through Clements' Strait, are given in the preceding pages; and the islands and dangers contiguous to it and the other branches of the straits of Gaspar, are described at the beginning of this section.

# *SAILING DIRECTIONS from BANCA STRAIT to PULO AOR. ISLANDS and DANGERS adjacent to the PASSAGE: also DIRECTIONS for RHIO STRAIT.*

WHEN CLEAR of Frederic Hendric Rocks at the North end of Banca Strait, and bound into the China Sea, steer N. by E. to pass between the Seven Islands and Pulo Taya, in regular soundings, increasing from 7 to 12 or 14 fathoms as the islands are approached.

To sail from Banca Strait to the northward.

In thick weather or in the night, the lead may be useful as a guide, to discover if there is any oblique current, for the depth will generally decrease over a bottom of ouze mixed with sand toward the Sumatra Coast, and increase near the Seven Islands over an ouzy or muddy bottom; but these islands must be approached with caution in the night, on account of the rock near the westernmost of them, for the soundings do not always to a certainty, point out its proximity.

Geo. site of the Seven Islands.

PULO TOOJOO, i. e. SEVEN ISLANDS, lie in 2 groups, extending 7 or 8 miles in latitude, the southernmost consisting of 3 islands, being separated from the others of the northern group; the N. Westernmost of these islands are in lat. 1° 8′ S., lon. 105° 24′ E., or about 10 miles East of Monopin Hill.* Some of them are seen from the northern extremity of Banca, being generally high, and may be discerned 8 or 9 leagues: they are all covered with trees except the westernmost, which is a Barren Rocky Islet, with a small rock just above water to the W. N. W. of it, distant 1 or 2 miles; this renders a cautious approach necessary in the night, or in thick weather. Pulo Docan, bears about E. N. E. from the Seven Islands 4 or 5 leagues, and the channel between it and them, has 15 and 16 fathoms regular soundings.

Pulo Docan.

Geo. site of Pulo Taya.

PULO TAYA, or SAIA, in lat. 0° 45½′ S., lon. 104° 58′ E., distant 34 miles N. 50½° W. from the N. Westernmost of the Seven Islands, bears from Pulo Docan W. by N. ¼ N.; being high, it may be seen 11 or 12 leagues in clear weather, and near it on the East side, lie 2 rocky islets. ILCHESTER SHOALS, to the northward of Pulo Taya, appear to be imperfectly known, and are much in the way of ships steering from Pulo Taya toward the East point of Lingin. The Ilchester returning from China in 1754, had thick weather after passing Pulo Aor, and in hauling to the W. S. W., struck on a shoal, December 12th, at 4 P. M., on which there was 2¾ fathoms sand and mud; she got off, by throwing the sails aback, after being about 10 minutes aground. When on it, the weather was thick, and 2 hummocks bearing N. N. Westerly, thought to be the East point of Lingin, or the islands contiguous to it, was the only land visible; and by computation from the succeeding noon observation, the shoal appeared to lie in lat. 0° 28′ S. After anchoring near it on the West side, in 18 fathoms, and weighing on the following morning, she steered S. S. W. and S. W. by S. 6 or 7 leagues, made Pulo Taya bearing S. E. by S. about 3 leagues, and passed to the westward of it; having experienced about 20 miles of westerly current from leaving Pulo Aor.

Ilchester Shoal.

The brig, Tweed, in December, 1799, shoaled suddenly in working into Lingin Bay, from 18 to 3 fathoms hard ground, on the western part of the Ilchester Shoals, with Pulo Taya bearing S. ¾ W., distant 4½ leagues, tacked immediately and steered S. S. E., deepening to 8 fathoms, then steered W. by S., and had overfalls from 20, to 10, 9, and 8 fathoms.

The Forth, in 1803, grounded on the West part of the Ilchester Shoals, with the small island off the East point of Lingin bearing N. by E. ½ E., distant about 12 miles.

* Lieut. Ross, on the 22d December, 1812, by chronometers and cross bearings, made the N. Westernmost of the Seven Islands 11¼ miles East of Monopin Hill; whereas, Capt. Lestock Wilson's observations in 1789, placed the westernmost rock, nearly on the meridian of that hill.

Ilchester Shoals were probably those seen by Captain Cowman, in the ship Magdalen, on his passage from New York to China, 17th August, 1806, for it appears by the following extract taken from his journal, that there are *several* shoal patches near this situation. "At 2 P. M. passed amongst some shoals, appearing to have no more than 2 or 3 feet water upon them in some places; Pulo Taya on with some of the shoals bore S. 41° W., Lingin Point then N. 27° W., other patches nearly dry, about 1½ mile N. E. by E. from the ship, and in sounding, we had never less than 17 fathoms." If these bearings are correct, the shoals appear to lie farther eastward than generally supposed, and are greatly in the way of ships: to avoid them in coming from the northward, Lingin Point should have a good birth, and it seems advisable not to haul to the westward to make Pulo Taya until near its parallel, or after having passed lat. 0° 32′ S.

Geo. site of Lingin; Islands near it.

LINGIN, or LINGA, is a large island, extending E. N. E. and W. N. W. about 16 leagues, its North part being situated on the equator. There is a mountain on its southern part, with 2 remarkable peaks* near each other, rising like spires from its summit, and Tanjong Eang the S. E. extremity of the island projects out into a point, in lat. 0° 20′ S., lon. 105° 4′ E., having islets and rocks around; it is formed of a hill, joined to the high land in the interior by a neck of low land, and often mistaken for an island. The N. E. side of Lingin has several islands near it, and those called the Dominos in lat. 0° 10′ S., are moderately elevated, the outermost of which, or East Domino, bears about North 3 leagues from Lingin East Point, and nearly the same distance from the opposite shore, having rocks projecting from it to the South, and close to the eastward of this small island, the depth is 14 fathoms; about 3 leagues off the N. E. part of Lingin, from 10 to 15 fathoms are the common depths; and irregular, from 14 to 22 fathoms, close to the rocks at the East Point.

To sail into Lingin Road.

Coming from N. Eastward, and bound into Lingin Road, round the East point of the island at a moderate distance, then steer westward for the anchorage, observing not to borrow too near the South coast, as the Stirling Castle was wrecked on a shoal that projects from the Third Point, counting westward from the East point of the island, which has 16 feet water on it, and 12 or 14 fathoms close to. If coming from Banca Strait, pass to the westward of Pulo Taya, and steer for the high land to the eastward of Lingin Peak, giving a moderate birth to Pulo Sinkep, which forms the West side of the channel, and in working, it may be approached within 3 miles in 6 or 5 fathoms: the soundings are not always regular, but they will decrease gradually as the road is approached. The anchorage is 5 or 6 miles off shore, in 5 or 4½ fathoms mud, with Pulo Taya bearing about S. S. E., the East point of Lingin East southerly, about 2½ or 3 miles to the S. Eastward of Pulo Kelumbo, a small island that lies about 4 miles S. S. Eastward from the mouth of the river, which issues from the peak, and upon its banks the town of Lingin is situated. The country traders, touch here at times with opium, for which in return, they receive tin, pepper, rattans, and some gold; but the inhabitants being treacherous, and addicted to piracy, this island is not often visited, for a ship intending to touch here, must be well armed, constantly prepared to repel any assault that may be made by their armed proas.

Lingin Bay, is of semicircular form, exposed to southerly and easterly winds, as large ships are obliged to lie far out, on account of shoal water, extending from the mouth of the river around Pulo Kelumbo and its adjoining islets.

Ships may also steer for the bay, by passing to the eastward of Pulo Taya, the channel being about 3 leagues wide between it and the Ilchester Shoals; in such case, borrow near Pulo Taya, then steer N. W. by W. and N. W., afterward, more northerly for the road.

Pulo Sinkep and other islands.

PULO SINKEP, PULO SLIAR, and PULO POONOOBOO, form a group of 3

* Called sometimes, the Asses Ears.

islands, with some adjoining islets, stretching from the S. W. part of Lingin 6 or 7 leagues to the southward; Pulo Sinkep, the easternmost of these, is high, and being separated from each other by narrow inlets, they appear as one large island.

Strait of Dassee, with sailing directions.

STRAIT OF DASSEE, called also Labooan Dadong, formed between this group and the S. W. end of Lingin, has soundings generally from 7 to 14 fathoms, and may be navigated with care, in ships of moderate size, as this is a short route from Lingin Road to the Straits of Dryon. If bound from Lingin Road to the westward, through the Strait of Dassee, steer out to the South and S. Westward, till near the N. E. part of Pulo Sinkep, to give a birth to the islets off Tanjong Datoo, the West point of Lingin Bay, and the extensive shoal which stretches from thence to the road. Having passed about mid-channel between the islets off Tanjong Datoo and those near the southern shore, steer for the S. West Point of Lingin, and the depths will be 12 and 14 fathoms near the islets and rocks on the South side of the strait, and 9 or 10 fathoms toward the Lingin shore; the bottom hard in the eastern part of the strait, and soft to the westward. Having passed the S. W. point of Lingin, steer about West in soundings of 11, to 9, and 8 fathoms soft ground, and pass to the northward of Tree Island or Green Island about 2 miles distant, in 7, 8, or 9 fathoms, then steer to the N. West for the Straits of Dryon.

Dogger Banks.

DOGGER BANKS, situated to the S. Eastward of Pulo Panjang, are considerably in the way of ships sailing between Banca Strait and Pulo Aor, in thick weather, or in the night; for the true situation of these 2 banks (which are thought to lie near each other) is not correctly known.

The Crown Prince, Danish Indiaman, struck on 1 of them in 1748, and had seen Pulo Panjang about ½ an hour before bearing N. W. by N.; the soundings near it decreased from 25, to 24, 23, and 19 fathoms coarse sand, close to the edge of the bank, on which ripplings were seen when she struck.

Jurian Verburg, sent in the Bark Ryder from Batavia, to examine Banca Strait in 1761, found 1 of these banks, called by him Geldria's Shoal; he had only 1 and 1½ fathoms water on it, coarse sand with shells, and 7 fathoms at its extremity. From the shoal, Pulo Panjang bore N. W. by N. northerly, Ragged Island N. 18° W., distant about 14 miles, and a rock above water appearing like a boat N. N. W., he made the shoal in lat 0° 30′ North, which seems too much to the southward, for Ragged Island, and more particularly the rock mentioned, which lies on a reef about 2 leagues to the southward of that island, could not be discerned from lat. 0° 30′ N.

Captain Dempster, returning from China in the Ganges, struck on 1 of these shoals at 9 P. M. 27th May, 1784; the helm was immediately put down, and the ship came about in 3½ fathoms rocks; stood off N. E. by E., and anchored in 20 fathoms sand, the water having deepened as fast as the lead could be hove. At day-light, Pulo Panjang in sight from the deck bearing N. W. by N., 2 small islands W. by S. distant about 7 leagues, with several small hummocks between it and them, appearing like low islands; the rippling on the reef then S. W. about ½ a mile. Observed lat. was 0° 37′ N., and the weather being hazy, prevented Lingin from being seen. The reef appeared to stretch E. N. E. and W. S. W. about a mile, and half that breadth, having on it great overfalls from 2 to 6 fathoms, and the boat on 1 part, found only 6 feet coral rock. At a small distance to the southward, the boat had 17 and 18 fathoms, to the northward 20 and 22 fathoms, and 16 fathoms close to the reef. The sea did not break on it, although Captain Dempster saw in 1 part the appearance of a rock even with the waters edge, there being only a rippling upon the reef when they examined it.

Probably the shoals seen by these ships, are one and the same, for Pulo Panjang bears N. W. by N. from both, although Verburgh describes that examined by him, to consist of

coarse sand and shells, and the latitude also disagrees considerably, but perhaps it ought not to be depended upon: these dangers are in lon. 105° 14′ E.

The West end of Pulo Panjang being high land, is sometimes mistaken at a distance for Bintang Hill.

To sail from Banca Strait to Pulo Aor.

FROM BANCA STRAIT, if bound into the China sea, after having steered about N. by E., and having passed between the Seven Islands and Pulo Taya, when 5 leagues to the eastward of the latter, steer N. E. by N., to give a birth to the Ilchester Shoals, and to cross the equator in 20 or 21 fathoms. From hence, steer about N. N. E. ½ E., until past the Dogger Banks, observing not to come under 24 or 25 fathoms between lat. 0° 30′ N., and 0° 45′ N., by which means, these dangers will be avoided. Having passed to the eastward of them in 25 or 26 fathoms, or having got into the latitude last mentioned, steer N. N. W. until in lat. 1° 0′ N.; being then abreast of Ragged Island, and Pulo Panjang, a N. W. by N. course will lead you fair to the eastward of Pulo Aor, if there is no lateral current, in soundings from 29 to 33 fathoms fine grey sand, or sometimes sand and mud.

To sail from the southward into Rhio Strait.

TO ENTER RHIO STRAIT, when coming from the S. E., or southward, pass along the East coast of Lingin at any convenient distance, in soundings from 14 to 18 fathoms, giving a birth of 3 or 4 miles to the islands off its N. E. part. Having passed these, steer to the N. W. for Pulo Rodong, which may be approached within 1 or 2 miles at the N. E. and North parts, in soundings of 10 to 12 fathoms: this island is of considerable size, with a peaked hill situated in lat. 1° 21′ S., and bears North from the northern part of Lingin, distant 3 or 4 leagues. From Pulo Rodong, steer N. Westerly toward the entrance of the strait, keeping Table Hill, situated on the South part of Pulo Gallatt, which is flat at the summit, a little on the larboard bow. In entering the strait, borrow toward the islets near Pulo Gallatt, as the Topies or Five Islands, forming the East side of the entrance, have shoals extending 3 or 4 miles to the S. S. W., and 1 or 2 miles from their western sides: the soundings will decrease to 8 and 10 fathoms inside, and in some parts to 5½ or 6 fathoms. When clear of the Five Islands, which lie to the W. N. W. of Long Island, (and between which is a passage, but not so wide as the western channel,) steer North and N. by E. for Rhio Town, and pass between the island off the S. W. point of Bintang, and Pulo Sootoo the other island to the westward; for shoals extend from the latter in a N. Westerly direction, nearly to the West side of the strait, and a shoal mud bank projects from it to the S. S. Westward. The S. W. point of Bintang Island, called Tanjong Bantang, is 5 or 6 miles to the southward of Rhio, and after passing it, continue to steer northward until abreast of Rhio Point, if to stop there; the common anchorage is in 5 or 6 fathoms to the northward of the point, under Pulo Beringa, in lat. 0° 57′ N. Rhio was formerly a port of great trade, but having suffered severely at various times, by requisitions of the Dutch, and piratical invasion, it affords few articles of merchandize at present; and is not frequented, except by small country traders, with the view of procuring a little pepper, or tin.

Port of Rhio.

To sail from it into Sincapour Strait.

DEPARTING from RHIO, and bound to the northward, avoid the shoal to the westward of Pulo Beringa, by borrowing on the East side of the strait, toward it and close to Pulo Tercoli, the next island, as the rocky banks to the southward of the latter, are not always easily discerned. From the North part of the largest bank, dry at low water, Capt. Robert Scott, had Bintang Hill bearing N. 27° E., the East part of Pulo Tercoli low and sandy N. 21° W., distant 3½ miles, West part of ditto N. 30° W., First Hill to the southward of the strait W. 5° S.

From the N. W. part of the bank, East point of Pulo Tercoli bore N. 11° W., West point of ditto N. 23° W., distant from this island not more than 3 miles, the first hill to the southward of the strait W. 3° N., Little Luban N. 61° W., Bintang Hill N. 31° E.

These banks are very dangerous, particularly in coming from the northward with a flood tide, if you do not keep near to Pulo Tercoli, as the channel is greatly contracted by them.

Having passed Pulo Tercoli, steer westward, and the depth will increase as Pulo Luban is approached; and after rounding the West end of this island, and Little Luban, at a moderate distance, the course is about North to pass nearly in mid-channel toward the North entrance of the strait, or rather nearest the western side, in various soundings from 10 to 20 fathoms. There are several shoals contiguous to the shores on each side, which render it necessary for those unacquainted to keep a boat sounding a-head, when sailing through this strait; but the

Pan Shoal. PAN SHOAL, situated at the North entrance of the strait, nearly in mid-channel, is the greatest danger, being extensive and rocky, sometimes visible at low water. There is a safe passage on either side of it, but that on the West side, between it and Pulo Battam, is not so wide as the other to the eastward between it and Bintang, although either may be adopted, if the land is approached close. When the North extreme of Bintang bore E. by N., the North extreme of Pulo Battam W. N. W., Barbucit Hill N. $\frac{1}{2}$ E., the shoal was in one with Bintang Hill bearing E. by S. $\frac{1}{4}$ S., distant about $\frac{1}{2}$ a mile. Its eastern extremity bears S. 4° W. from Barbucit Hill, and its western extremity S. by E. $\frac{1}{2}$ E. from Johore Hill, and its centre bears E. S. E. from the N. E. point of Pulo Battam. To avoid this shoal, it is best to proceed by the eastern channel, keeping within 3 or 4 miles of the Bintang shore, in soundings of 13 or 14 fathoms, to 18 and 20 fathoms toward the shoal; and when the North extreme of Pulo Batang is brought to bear W. by S., you are clear of it, and entered into the Strait of Sincapour. Barbucit Hill, kept North or N. $\frac{1}{4}$ W., leads clear of it to the eastward; and Johore Hill bearing about N. by W., leads clear of it to the westward.

And back into the Strait of Rhio. Coming from the northward into Rhio Strait, bring Johore Hill to bear N. N. W., or Barbucit Hill N. $\frac{1}{4}$ W., then steer South, taking care not to bring the latter to the eastward of North; for in such case, you would be very near the Pan Shoal. Having passed it, and fairly entered the strait, the course is about South to round Little Luban about 2 or 3 cable's lengths distance; then E. by S. and E. S. E., to pass at a small distance on the West sides of Pulo Tercoli and Pulo Beringa.

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## *DIRECTIONS for SAILING from BANCA STRAIT, through the STRAITS of DRYON: To return SOUTHWARD, by the same ROUTE.*

Straits of Dryon. STRAITS OF DRYON, or DURIAN, or rather the passage known by these names, is about 40 leagues in length from Pulo Varela to the Carimons; and on the West side, is bounded by the coast of Sumatra, False Durian, Sabon, and the contiguous islands; on the East side, it is bounded by the islands off the South and West sides of Lingin, Great and Little Durian, and the adjacent islands.

To sail from Banca Strait to the former. Being abreast of Batacarang Point in 7 fathoms, and bound through these straits, steer about N. N. W. $\frac{1}{2}$ W. toward Pulo Varela, distant about 22 leagues; but the bank along the Sumatra coast in this space being very flat, the soundings are the best guide, by keeping in from $5\frac{1}{2}$ to 7 fathoms; and in working, the coast may be approached to 5 fathoms. The tides near the shore, are generally strong; in the offing they are irregular, and currents sometimes prevail.

Pulo Varela. PULO VARELA, or Barallah, in about lat. 0° 54′ S., bearing W. $\frac{3}{4}$ S. from Pulo Taya

about 12 or 13 leagues, is of middling height, and may be seen 7 or 8 leagues. You may anchor at the S. W. side, and procure water, which is got on the island; but this ought only to be done in case of necessity, as the piratical proas which lurk about these islands, have been known to assault and massacre the crews of boats, sent on shore to procure water at this island.* There are some islets and rocks contiguous to Pulo Varela, which are steep to; the channel to the northward, between it and the small islands contiguous to the South end of Pulo Sinkep and Pulo Sliar, is safe, with soundings from 10 to 16 fathoms water, by giving a birth to Reef Island, which bounds the N. W. part of the passage, but the channel to the southward, betwixt Pulo Varela and the coast, is more frequented and better known than the northern channel.

In passing through it, keep in 11 or 12 fathoms toward Pulo Varela, to give a birth to the spit of hard ground projecting from Tanjong Bon, which is steep from 5 fathoms; but in working, it may be approached occasionally to 6 or 7 fathoms. Being through the narrow part of the passage between Tanjong Bon and Pulo Varela, which is about 5 miles wide, a course N. W. by W. should be steered for the Calantigas, keeping along the coast in 9 to 12 fathoms; with a working wind, the Sumatra coast may be approached to 6 or 7 fathoms. In this track, the tides must be particularly attended to, for they are often irregular, and sometimes set out of Jambee River to the N. Eastward $2\frac{1}{2}$ or 3 miles per hour. To sail between it and Sumatra.

Reef Island, distant about 5 leagues N. Westward from Pulo Varela, is a flat low island, often mistaken for the latter, in coming from the northward. When steering toward the Calantigas, the southernmost of these islands must not be brought more westerly than N. W. by N., until Reef Island is bearing to the southward of E. by S., to avoid a reef which the ship Speke struck upon, bearing about S. E. from the South Calantiga 3 or 4 leagues, and W. $\frac{1}{4}$ N. from Reef Island, with 10 fathoms water close to: a small black rock is sometimes seen upon it, about the height of a boat. Betwixt this reef and the Calantigas, there is a safe passage on the East side of these islands, by rounding the northernmost about $1\frac{1}{2}$ mile off, in 6 or 7 fathoms; the soundings in this passage are generally from 7 to 9 fathoms muddy bottom, sometimes sand, but the western channel is preferable.

CALANTIGAS, in about lat. 0° 35′ S., bearing nearly N. W. by W. from Pulo Varela 11 or 12 leagues, are 5 islands extending about 7 miles nearly N. 15° E. and opposite; the 3 principal islands are high, and may be seen 8 leagues, and the others, 5 or 6 leagues from the deck. There is 7 fathoms close to these islands, and off the South end of the southernmost, lie 2 rocks, each about the size of a long boat;† when bearing N. N. E., all the islands are in 1, and they open when the southernmost bears N. by W. $\frac{1}{2}$ W. Having approached these islands, give a birth of $2\frac{1}{2}$ miles to the southernmost, to avoid the 2 rocks that lie near it, and by keeping about the same distance to the westward of them, the depths will be mostly from 9 to 10 fathoms mud in the fair channel: in working, the coast may be approached to 6 fathoms; and from this depth, to 9 or 10 fathoms toward the islands, is a favorable track for that purpose. Calantigas. Directions.

Having passed the Calantigas, a course about North and N. $\frac{1}{2}$ W. should be steered for the southernmost of the Three Brothers, distant about 22 leagues, and bearing N. $\frac{1}{2}$ W. from them: the Sumatra coast may be approached in working to 7 or 8 fathoms, but the spit that stretches out from Tanjong Bassoo, to the N. Westward of the Calantigas, being steep to, ought to have a birth in passing. The best guide, is to keep in 14 to 16 fathoms, taking care not to deepen above 18 or 19 fathoms to the eastward, particularly as the distance from the Calantigas is increased, for the ground on that side is foul and improper for anchorage.

* The ship Herculus, was attacked by 17 large proas near this place, and narrowly escaped being taken by them.

† The Althea's journal, states, that no rocks were seen in a southerly direction, but 2 small rocks were observed to the N. W., about 2 miles off shore.

To the N. Westward of these islands about 4 or 5 miles, there are some spots with 7 to 9 fathoms sand; but in steering about North, the depths will increase to 14 and 16 fathoms, which ought to be preserved, by edging a little to the eastward when they decrease, and hauling to the westward when the water deepens.

Three Brothers.

THREE BROTHERS, extend nearly North and South about 12 miles, the southernmost being the largest and highest, although of small extent, and may be seen at 6 leagues distance. It lies in lat. 0° 31′ N., and on the N. E. side, there is a white cliff or rock, which makes this island remarkable. The Middle Brother is not so high as the southern 1, and lies North from it 3 miles. The North Brother is smaller and lower than the other 2, and is sometimes called the Round Brother: it lies to the N. N. Westward of the middle 1 about 3 or 4 miles, and betwixt them, there is a safe passage with 11 to 17 fathoms water, now frequently used. Ships going through it, should haul close round the Middle Brother, to give a birth to the rock above water, situated on the extremity of the reef that projects from the North Brother about 2 miles to the S. E., and is partly dry at low water: an extensive shoal in the offing, bounds the channel to the eastward of these islands, having great overfalls near it, and only 3 or 4 fathoms rocks upon it in some parts.

Great and Little Durian.

GREAT and LITTLE DRYON or DURIAN, situated about N. by W. from the Brothers, separated from each other by a narrow creek, are 2 high islands, bounding the straits on the N. E. side. False Durian, to the westward of the Brothers, bounds the strait on the S. W. side, and has a peak on it; but the conical peak of Great Durian, being higher than any of the other land, is first discerned in coming from the southward.

As the islands hereabout have a similar appearance, strangers ought to be careful in coming from the southward, not to mistake one for the other, for some ships have not been able to discern the proper passage.*

To sail toward the Brothers;

When the peak of Great Durian is seen bearing about N. ½ W. or N. by W., you will be in the fair track, steer for the South Brother, which in one with Great Durian Peak, bears N. by W. When the Middle Brother is seen, it ought not to be brought to the westward of that peak until the Southern Brother is approached, on account of the shoal to the eastward of these islands, for it extends considerably to the southward. The channel betwixt the shoal and the Brothers, is about 4 or 5 miles wide, having 16 and 17 fathoms on the East side, and 10 or 11 fathoms toward the Brothers. The channel to the westward of the Three Brothers, betwixt them and False Durian, has from 8 to 12 fathoms water, and is equally safe as that to the eastward of them.

and through the eastern channel.

TO SAIL through the EASTERN CHANNEL, a birth of 2 miles should be given to the South and Middle Brothers, by rounding them in 10 or 11 fathoms, and deepening to 12 or 13 fathoms on drawing near the North Brother, to avoid the reef projecting from it; but care must be taken not to stand far over toward the Eastern Shoal. This will not be approached too close, if the beach on the Middle Brother be kept well in sight from the deck; or in working, if you get on the edge of the overfalls in standing to the eastward, immediately tack, and stand toward the Brothers to 10 or 11 fathoms. When the southern point of the Little or South Durian is approached, 3 islets near it called the Tombs will be discerned, and Sabon Hill bearing about W. 20° N. making like 2 islands, which may be mistaken for the Carimons. Having passed the Middle and North Brothers on the East side, at 2 to 3 miles distance, haul to the westward, giving a birth of 1 or 1½ mile to the

* H. M ship Buffalo, in October, 1803, coming from the southward, and not being able to discover the proper passage, got to the eastward of Durian; she then stood to the northward amongst the islands betwixt Durian and Pulo Batang, through a safe passage with regular soundings, 6 fathoms mud the least water; although no navigable passage amongst these islands to the eastward of Durian, was formerly thought to exist.

Tombs and the southern part of Durian, as some rocks under water, lie scattered along that shore.

TO SAIL through the WESTERN CHANNEL, after the South Brother is approached steer to the westward of it at 1½ or 2 miles distance, and proceed to the northward in 9 and 8 fathoms, about mid-channel between the other Brothers and the eastern part of False Durian, or rather nearest the latter, to avoid the foul ground contiguous to the Brothers, and and the rocks projecting from the N. E. end of False Durian. To sail through the Western Channel,

Having cleared the Brothers by either of these channels, Passage Islands will be seen to the N. W.; these are 2 small islands on the East side of the passage, having a flat island opposite to them, which lies on the West side of the passage. There is a channel to the eastward, betwixt these islands and Durian, which is not frequented, for it is not so convenient as the former; but in case of necessity, you may sail betwixt any of these islands, giving them a birth of 1 mile, as their points are generally rocky and foul ground.

After leaving the Brothers, steer for the Passage Islands, in mid-channel, the depths will be from 17 to 22 fathoms. When they are approached, Red Island, which lies off the N. W. part of Durian, will be discerned, known by 2 islets to the northward of it called the Twins; betwixt these and Middleburg Shoal, there is a safe passage, with care, in day-light; but as foul ground projects from the N. W. end of Red Island about 2 or 2½ miles, and the depths being from 17 to 20 fathoms, with some overfalls, the channel to the westward is preferable. and to Passage Islands.

MIDDLEBURG SHOAL, situated nearly midway between Red Island and the Sabon shore, is about 1¼ mile in extent, steep to, on both sides. When the 2 Passage Islands are nearly in one, they are in a line with the shoal bearing S. 34° E.;* the rocks on it are dry at ½ ebb, and with a good look out, it will generally be visible at high water. From the centre of the shoal, Red Island bears E. 15° N., Sabon Peak W. 15° N., and the Peak of the Little Carimon about N. W. by N., the Twins then open about a cable's length to the North of Red Island. If it is intended to pass to the eastward of the shoal, the best track seems to be about midway betwixt it and Red Island in 18 and 17 fathoms mud, which channel is about 3 miles wide, from Middleburg Shoal to another shoal detached about 1½ or 2 miles from the N. W. part of Red Island, having 19 and 20 fathoms close to it on the West side, and 20 to 22 fathoms in a narrow passage betwixt it and Red Island. The country ship, Warren Hastings, appears to have passed between Red Island and this detached shoal, according to the following extract from her journal. March 31st, 1789, at 11 A. M. passed between Red Island and a reef of rocks to the westward of it; when in mid-channel, they bore E. by N. ½ N. and W. by S. ½ S., about 1 or ½ a mile distant from each. This narrow passage ought not to be followed; and if the other between the Middleburg Shoal and the reef to the West of Red Island is adopted, care is requisite: when the Middleburg Shoal is conspicuous, you may borrow toward it with a commanding breeze; otherwise, it will be prudent to keep mid-channel between it and Red Island; it is said, that the Peak of Great Durian bearing S. E. ½ S., or the northern Passage Island in one with the West end of the peak of False Durian, will lead fair through betwixt Red Island and Middleburg Shoal. In working, do not bring the peak of False Durian above a ship's length open to the westward of the northernmost Passage Island, nor nearer to the reef off Red Island, than to bring that peak nearly on with the southernmost Passage Island. Here, the tides are very strong, between Middleburg Shoal and Red Island, the flood setting to the south- Middleburg Shoal.

* Lieutenant Boyce, of the Nautilis, sent his boat to the shoal, and when upon a patch of 4½ feet rocks, the 2 Passage Islands were in 1 bearing S. 29° E., Sabon Peak W. 15° N., Red Island E. 14° N., the southern Twin about a ship's length open with Red Island, and the same distance from the other Twin.

ward, and the ebb to the northward, from 3 to 4 knots on the springs; high water about 5 hours at full and change of the moon.

To sail from Passage Islands.

To sail to the westward of Middleburg Shoal is advisable, the channel being about 3½ miles wide, with regular soundings 8½ and 9 fathoms near the shoal, decreasing gradually toward the Sabon shore over a bottom of soft mud, proper for anchorage. When clear of Passage Islands, haul immediately to the westward for the Sabon shore, then steer about N. N. W. along it, in 7 fathoms, which will lead in the fair track betwixt that shore and Middleburg Shoal. In working, do not deepen above 8½ fathoms, as there is 9 fathoms very near the western edge of the shoal; but the Sabon shore may be approached to 5½ or 6 fathoms. After steering along the Sabon shore in about 7 fathoms until Red Island bears E. by S., edge out a little, about N. by W. or North, and deepen to 10 or 12 fathoms; continuing to keep in these depths, steer to the northward, taking care to give a good birth to

to the Little Carimon.

the South end of the Great Carimon, for a reef is said to project a great way East from the South Point of that island. When abreast of the point, the distance of 4 or 5 miles should be preserved from the East side of the Great Carimon, and the Little Carimon may be rounded at any convenient distance, if bound to the northward.

There is a bank of sand to the eastward of the Carimons, extending N. N. W. and S. S. E. 4 or 5 miles, upon which the Ariel shoaled regularly from 17 to 7 fathoms sand, and steered N. N. W. about 5 miles, least water 3½ fathoms, which appeared to be the least water on it. When upon its South extremity, the hill over Tanjong Boulus bore N. ½ E., outer extreme of Little Carimon N. N. W. ¾ W., peak of Great Carimon N. W. by W., low land about Tanjong Boulus North, distant from the Little Carimon 5 or 6 miles; and continuing a N. N. W. course, deepened quick off the North end of the bank to 10 and 15 fathoms.

Sabon and the adjacent islands.

SABON, is the principal island on the West side of the channel, and lies nearest to the Great Carimon, but the whole of the western shore from False Durian to the Carimons, formed of numerous low islands, is generally called the Sabon shore; for they are separated from Sabon, and from each other, only by very narrow channels, and therefore, appear as 1 continued island.

A reef of rocks, dry at ½ tide, projects from the Sabon shore about ½ a mile, with the hill bearing W. ½ N., which is easily avoided by edging out a little from it. Sabon Hill or Peak cannot easily be mistaken, being the only hill on the West side of the channel to the southward of the Great Carimon; this island has on it *two* high peaked hills, and the Little Carimon, *one*. The latter, is the northernmost of these islands that bound the West side of the channel; it and the Great Carimon, are much higher land than any of the islands to the southward. All the islands adjacent to the straits of Dryon, are covered with trees, and the whole of the N. E. part of Sumatra, is woody, and low land.

Straits of Sabon, Mandol,

STRAITS of SABON, and MANDOL are very intricate, and never attempted by European navigators. The former is contiguous to the West sides of False Durian, Sabon, and the Great Carimon; that of Mandol, is along the Sumatra coast, having part of this coast, the Islands Mandol, and Pantjoor, and the entrance of Brewer's Strait on the West side; and several islets and reefs on the East side, which separate it from Sabon Strait. As both these straits are bordered by reefs, with shoal water in some places, they appear to be only navigable by proas or small vessels.

and Brewer's,

BREWER'S STRAIT, is a narrow arm of the sea, which extends from the former straits to the westward; and joining Siak River, falls into Malacca Strait nearly opposite to the town of that name, by which the coast of Sumatra, to the westward of the Carimons, is formed of several islands. Pantjoor is the largest, and with the others, is considered by na-

vigators as the main land. Although Brewer's Strait is narrow, there is said to be good depth of water in it, but it is only navigated by the country proas.

To sail from the Carimons to the southward through the straits of Dryon.

IF BOUND to the SOUTHWARD, through the straits of Dryon, steer from the Little Carimon about S. S. E. or S. S. E. ½ E., observing not to come under 10 or 12 fathoms until past the South extreme of the Great Carimon, which ought to have a birth of 4 miles on account of the reef. When this extreme bears W. by N., or when the space between it and Sabon is fairly open, haul in S. by E., or South, until in 7 fathoms, then keep along the Sabon shore in this depth, which will carry you in the fair channel, to the westward of Middieburg Shoal. In working, deepen not above 8 or 8½ fathoms abreast of the shoal. When Red Island is bearing N. E. by E., and the Twins nearly on with its South point, you will be clear to the southward of Middleburg Shoal, and should haul over gradually for the Passage Islands. Leaving a flat island to the westward, and the Two Passage Islands to the eastward, the depths will be from 18 to 22 fathoms; and being through this channel, steer for the westernmost of the islets off the South end of Durian, called the Tombs, keeping nearest the eastern shore. The Tombs must have a birth of 1 mile in passing, for the foul ground about them and the South end of Durian, ought not to be approached under 16 fathoms; the depths in this part of the channel are from 17 to 20 fathoms. If to proceed through the western channel, betwixt the Brothers and False Durian, steer for the N. E. end of the latter, and pass between it and the North Brother, keeping about mid-channel; proceeding to the southward, continue to keep in mid-channel, between the other Brothers and the East side of False Durian.

To pass to the eastward of the Brothers, after rounding the Tombs, and S. W. end of Durian, steer East or E. by S., keeping 2 miles from the North Brother in passing it on the North and East sides, where the water will shoal to 12 or 13 fathoms; then steer S. S. E. and S. by E., to pass the Middle and South Brothers at the same distance, not borrowing nearer to them than 10 or 12 fathoms. With a working wind, care must be taken not to stand too far over toward the shoal in the offing, but tack immediately, if irregular soundings are got on the overfalls near it; nor stand so far out, as to sink the beach of the Middle Brother from the deck. The depths in this channel will be mostly from 10 or 12 fathoms near the Brothers, to 16 or 18 fathoms near the overfalls on the edge of the Eastern Shoal.

BEING abreast of the South or Great Brother, about 3 miles distance, to avoid the southern extremity of the eastern shoal, steer South or S. by W. until the Brother is brought to bear N. N. W.; and whether you have passed to the eastward or westward of the Three Brothers, after having brought the South Brother to bear N. N. W. or North, steer for the Calantigas about a South course, and endeavour to keep in from 14 to 16 fathoms. With a working wind, the best track is to stand to the eastward until in 17 fathoms, about mid-channel; and into 12 fathoms toward the Sumatra shore; but not under this depth in passing Tanjong Barro, situated a little to the southward of the equator, and Tanjong Bassoo to the N. Westward of the Calantigas. After passing Tanjong Bassoo, the coast may be approached occasionally to 6 or 7 fathoms; but the best track with a fair wind, is about mid-channel betwixt it and the Calantigas, or to pass to the westward of these islands about 2½ miles if the wind is N. Easterly, to avoid the 2 rocks off the southernmost island.

Having passed the Calantigas, the southernmost of these islands must be kept to the northward of N. W. by N. until Reef Island bears East or E. ½ N., to avoid the reef bearing S. E. from the South Calantiga; the proper track is, to keep along the Sumatra coast in 9 to 12 fathoms, in steering from the Calantigas to Pulo Varela, borrowing to 6 or 7 fathoms toward the coast, with a working wind. Great care is, however, necessary, if running here in thick weather, or in the night, on account of strong tides setting into, or out of the rivers;

for the Princess Charlotte, at 1 A. M. on the 11th of April, 1813, steering S. E. by E., shoaled suddenly from 14 to 8 and 5 fathoms, then grounded on a bottom of sand and mud, opposite to the mouth of Jambee or Sambir River. At day-light Pulo Varela bore E. N. E., Lingin Peak N. N. E. ½ E., Tanjong Bon S. E. by E. ½ E., the Sumatra shore distant about 2 or 2½ leagues; lat. observed 0° 55′ S. Having grounded at high water, the tide fell from 18 to 10 feet, and with every exertion by rafting the spars along side, starting water, and throwing 1332 bags of rice overboard to lighten the ship, she could not be floated off until the 15th, or 4 days after she grounded on the bank.

Pulo Varela, bears about S. E. by E. 11 or 12 leagues from the Calantigas, and may be passed about 2 or 3 miles distance in 10 or 12 fathoms; but the spit surrounding Tanjong Bon, on the opposite side of the channel, although steep from 5 fathoms, may be approached to 6 fathoms in working.

From Pulo Varela to Batacarang Point, at the entrance of Banca Strait, the course is about S. S. E. ½ E. 22 leagues, and the whole of the bank fronting the coast, is in this space very flat, with regular soundings upon it; the best guide, therefore, is, after leaving Pulo Varela, to keep along the coast in from 5½ to 7 fathoms, until Batacarang Point is approached; and 6½ or 7 fathoms are the proper depths to preserve, when passing this point and entering into Banca Strait, to avoid the Frederic Hendric Rocks, on the East side of the channel: with a working wind, the point may be approached to 5½ or 5 fathoms.

# *STRAIT OF MALACCA.*

## 1st. DESCRIPTION OF WINDS AND CURRENTS: DIRECTIONS FOR SAILING INTO, OR OUT OF THE STRAIT.

Explanatory remarks relative to the navigation of Malacca Strait.

A BRIEF DESCRIPTION of the prevailing winds and currents near Achen Head and the Nicobar Islands, is given in Volume First of this work, under the head of "Directions for the Outer Passage, to places on either side the Bay of Bengal, &c." and directions for sailing to, and from Achen and Malacca Strait, are given under the title "Directions for Sailing from Bengal, Madras, and other parts of the Bay, &c." and also in the section before it, some instructions will be found. Farther directions with a more particular account of winds and currents at the *entrance* of the strait, have been given in this present volume, under the title "West Coast of Sumatra," in Section 1st, where Achen and the circumjacent islands are described; and here, it seems necessary to give a brief summary of the winds and currents which prevail *inside* of the strait; with some additional instructions for sailing *into*, or *out* of it, when ships come *from*, or are bound *to*, the Coromandel coast, or Ceylon.

S. W. monsoon.

S. W. MONSOON, prevails outside of Achen Head from April to October, and seldom blows far into the strait, particularly near the Sumatra side, for the force of the monsoon, being repelled by the mountains and high land stretching from Achen along the coast of Pedir, it is succeeded by light variable winds and calms, with sometimes land breezes, or hard sudden squalls from the Sumatra coast in the night, which require great caution. A ship passing Pulo Rondo with a strong S. W. monsoon, will be liable to lose it as soon as she gets to the eastward of Pulo Way, and brings Achen Head in the direction of the wind.

Some navigators, prefer the track from Pulo Rondo along the coast of Sumatra to Diamond Point, and from thence to Pulo Varela and the Arroas. Sometimes, speedy passages have been made by this route, both early and late in the season; and a ship adopting

it, should keep close along the Pedir coast, to benefit by the land and sea breezes, which are found to blow only near the shore; the latter, not farther than a few miles from it. This is rendered more necessary, because light airs and calms prevail greatly in the offing, and the current generally setting strong along the coast of Pedir to the westward in the S. W. monsoon, she will probably be drifted about, or carried back toward the entrance of the strait, unless she keep close to the coast, where there is anchorage in many places within 1 or 2 miles of the shore. To enter the strait by the Pedir Coast.

This track is now nearly exploded, for exclusive of the prevailing light baffling winds and westerly currents, it is also subject to dangerous lightning, and sudden severe squalls from the land in the night. The route on the other side of the strait, adjacent to the Malay coast, is therefore prefered, because there is less lightning on this side, *seldom* any severe squalls, few calms; but generally variable winds, or land and sea breezes, and sometimes a favorable current, with regular tides near the land, as a ship proceeds to the eastward. The middle of the strait, should if possible always be avoided, especially about Pulo Pera,* where calms predominate in the S. W. monsoon. The route along the Malay side preferable.

S. E. and Southerly winds, prevail much throughout the strait during the S. W. monsoon, but they vary frequently in every direction, although those between S. E. and S. W. generally predominate.

SUMATRAS, or squalls from south-westward, are often experienced in the S. W. monsoon; also North-westers, or squalls from this direction, are then more common than in the other season. Sumatras generally come off the land during the first part of the night, and are sometimes sudden and severe,† accompanied with loud thunder, lightning, and rain; they are experienced throughout the strait, particularly in the vicinity of the Pedir Coast, and between Parcelar Hill and the Carimons. Here, they often blow for 6 or 8 hours at a time, either in a strong or moderate gale, the commencement being mostly sudden and severe; for in Malacca Road, where they generally begin between 7 or 8 P. M. and midnight, many ships part their cables, and some have been driven on the mud bank that lines the shore, by these squalls. Sumatras.

NORTHWESTERS, do not prevail so much as the former, and although most common in the northern part of the strait, between Achen Head and the Arroas, they sometimes blow through it to the Carimons; or even through Sincapour Strait to Pedro Branco. These blow sometimes severe at their approach, but their strength soon abates; they are mostly preceded by a *black cloudy arch*, rising rapidly from the horizon toward the zenith, allowing not more than sufficient time to reduce sail after its first appearance; but at other times, the approach of these squalls is more slow. Like Sumatras, the Northwesters are sometimes accompanied by thunder, lightning, and heavy rain. Should a ship be at anchor stopping tide, during a calm or otherwise, and a black cloud begin to rise, indicating a Northwester, the anchor ought to be instantly weighed if bound to the southward, before the squall reach her; as the first part of these squalls generally blow strong, she may find it impossible to weigh the anchor, and therefore be deprived of benefiting by them. Northwesters

To benefit by them.

The passage through the strait, is greatly facilitated by running in the night, for steady breezes often prevail during the absence of the sun, when calms and faint airs are experienced in the day.

To persons unacquainted, Malacca Strait appears an intricate navigation, but as the channels are mostly spacious, with good anchorage, it is certainly not dangerous if common pru- Remarks on the navigation of the Strait.

* Near this island, many ships have been 6 or 8 days delayed by calms, during the S. W. monsoon.

† Ships are liable to lose a topmast in these squalls; 1 ship lost all her topmasts, the commander having been erroneously informed, that no squalls in Malacca Strait required precaution, excepting those which came from N. Westward.

dence is observed. Many ships keep under way day and night, in most parts of the strait, and often pass through, without anchoring above once or twice. To persons a little acquainted, or even to strangers, there is little danger by keeping under way with clear weather during the night, in any part of the strait, except when passing the Two and a Half Fathoms Bank between the Arroas and Parcelar Hill, passing Tree Island when coming from the northward, from thence to St. John's if not very clear, and going out betwixt Pedro Branco and the reef off Point Romania. Ships which sail well, will gain ground during neap tides, with a moderate working wind in most parts of the strait, against the tide or current, if every advantage is taken of the favorable shifts of wind. If the wind is directly contrary, it may be found impossible to gain ground at times, even against neap tides, between the Arroas and Mount Mora, where they run with greater strength than in any other part of the strait. A stream anchor is very convenient for stopping tide in most parts of the strait; and in calms during the day, a kedge is sometimes sufficient for that purpose, where the tides are not strong.

N. E. monsoon.

N. E. MONSOON, may be considered the fair season throughout Malacca Strait, for the weather is then generally settled; seldom any hard squalls are experienced, and there is much less thunder, lightning, and rain, than in the other season. Northerly and N. E. winds then prevail, particularly near the Malay side of the strait, breezes mostly blow from that shore during the night. These North and N. E. winds, frequently blow strong betwixt Pulo Jarra and the islands at the North end of the strait; ships, therefore, coming from the southward, and bound into the harbour of Prince of Wales' Island in this monsoon, should after passing Dinding, keep along the edge of the mud-bank which lines the coast, that they may not be delayed in reaching the harbour with the strong N. E. winds and short sea, liable to prevail in the offing, when near Prince of Wales' Island.

Ships can proceed through the strait in both monsoons, whether bound to the northward or southward; but those going to the northward, generally make the most speedy passage, and sometimes get through, without anchoring above once or twice.

Current and tides.

THE CURRENT in Malacca Strait, where tides do not prevail, sets often to the northward; in the middle of the strait, it generally sets in that direction, from the Arroas to Junkseylon and Pulo Rondo, in both monsoons; but sometimes to the southward along the Malay side, during the N. E. monsoon. In the entrance of the strait, betwixt the Pedir coast, Pulo Bouton, and Junkseylon, the general course of the current is to the northward all the year round: but along the Malay coast, and amongst the islands contiguous to it, regular tides mostly prevail. The current runs along the coast of Pedir, out of the strait to the westward during the S. W. monsoon, whilst it is setting to the northward between Pulo Rondo and Junkseylon; but close in with the Sumatra coast, there are tides from Diamond Point to the S. Eastward. About the Arroas, the current sets often strong to the N. Westward, with a slack, or weak flood at times, setting to S. Eastward; from thence to the Carimons, regular tides prevail throughout the strait from one side to the other, and the ebb which sets to the N. W. runs longer, and is stronger than the flood. The flood sets to the S. E. as far as the Carimons, and between the North end of the Little Carimon and Tree Island, meets with the flood running in from the China Sea through Sincapour Strait; after this junction, the flood sets to the South, toward the straits of Dryon.

To sail from Madras or Ceylon, to Malacca Strait in the N. E. monsoon.

SHIPS from MADRAS or CEYLON, if bound to Malacca Strait in the N. E. monsoon, will be liable to have a tedious passage; they ought to tack at times with the favorable shifts, and if possible keep well to the northward, to be enabled to pass between the Little Andaman and Car-Nicobar Islands, or through the Sombreiro Channel, if they come from Madras. Those which come from Ceylon in this season, will probably have a long passage

of 20 to 30 days, even if they sail tolerably. When the winds permit, these ought to keep well toward the South end of Great Nicobar in entering the strait; but they may enter it by the Surat Passage, if they fall to leeward of Pulo Brasse, and find difficulty in getting round the islands off Achen.

During the strength of the N. E. monsoon, in December and January, it is frequently very difficult in an indifferent sailing ship, to get from Achen along the coast of Pedir to Diamond Point,* as the current mostly runs to the westward there, whilst it is setting to the northward in the offing; therefore, ships in these months, ought to stand off from the Pedir coast, and endeavour to get in with Junkseylon Head, or near the islands on the Malay side, where favorable winds and land breezes will be found, to carry them along that coast to the S. Eastward.

Also in the S. W. monsoon;

SHIPS bound from Madras in the S. W. monsoon, have the choice of passing to the southward of the Nicobars, or through any of the channels between these islands and the Little Andaman; the Sombreiro Channel being safe, and the most direct route, is preferable when observations are obtained; and a ship ought to borrow toward the South side of the entrance in approaching it, because the currents near, and among these islands, run mostly to the northward with the S. W. monsoon. Ships which come from any part of the Coromandel coast to the northward of Madras, should pass betwixt the South end of the Little Andaman and Car-Nicobar, and the same channel may be adopted by them in the N. E. monsoon, borrowing in either case, to the windward shore; when through it, steer a course to give a proper birth to Junkseylon Head, and to pass Pulo Bouton at a moderate distance.

SHIPS from Ceylon, bound into Malacca Strait during the S. W. monsoon, should steer to pass nearly mid-channel between Pulo Rondo and the South end of Great Nicobar, keeping in about lat. 6° 20′ N, when passing through the channel. If the weather is cloudy, and the wind strong from S. W. or S. S. W., borrow toward the islands off Achen, if the latitude is not known by observation, in case of a northerly current; but when the wind prevails from westward, the current sometimes sets southerly; great caution, is therefore, requisite, if the latitude is not known *near* the truth, when running into the entrance of the strait in the night, during dark blowing weather.

A ship bound to Achen, in this season, ought to keep well to the southward, to fall in with Achen Head, then proceed through the Surat Passage, or through the Bengal passage, close round the North end of Pulo Brasse, and along the East side of that island to the road.

and to enter the Strait, and proceed along the Malay side to the Arroas.

WHETHER the Sombreiro Channel, or that to the southward of Great Nicobar be chosen, in order to avoid baffling light winds adjacent to the coast, inside of Achen Head, give a wide birth to the islands off it, and steer eastward for Pulo Bouton. By keeping well out from the land of Sumatra, and falling in with Pulo Bouton bearing about East or E. by S., sometimes brisk westerly winds will continue up to Prince of Wales' Island, when calms and faint breezes prevail near the coast of Pedir. This does not always happen, for light airs happen at times, from the coast of Pedir directly across to the Malay side; it is, however, the preferable route, for considerable advantage is generally experienced, by avoiding the islands off Achen, and the coast of Sumatra, during the strength of the S. W. monsoon. When the winds are light and baffling from southward, a ship may *sometimes* be carried to the northward of Pulo Bouton in steering for it, by the northerly current prevailing in the entrance of the strait; but after approaching the islands on the Malay side, she will get to the south eastward along that coast without difficulty, and find there, N. Westerly and varia-

*The Surat Castle, got round Achen Head in December 1807, and was nearly 6 weeks from thence to Diamond Point, and from the latter place, she got to Prince of Wales' Island in 2 days.

ble breezes. After passing to the westward of Pulo Bouton at any convenient distance from 2 to 7 leagues, steer for the Sambilangs, if not bound to Prince of Wales' Island, keeping within a moderate distance of the coast, in soundings of 35 to 20 fathoms. With a working wind, the West side of this island may be approached to 10 or 12 fathoms, and the extensive mud bank that stretches along the coast from thence to Pulo Dinding, may be borrowed on to the same depths, if the lead is kept briskly going; observing, that the water shoals rapidly on the edge of it when under 15 fathoms. This bank is all soft mud, and projects in some places about 3 and 4 leagues to seaward from the low coast of Perah; small vessels may borrow on it to 7 or 8 fathoms, but if the helm is put down in a large ship in 9 or 10 fathoms, when standing toward the bank with a fresh breeze, she will in some parts be in 7 or 8 fathoms before the sails are trimmed on the other tack.

After passing betwixt the Sambilangs and Pulo Jarra, at any discretional distance from either side, as circumstances require, with a fair wind, a S. S. E. course will be proper to get soundings on the western extremity of the North sand, or to get sight of the Arroas bearing to the S. Eastward. With a contrary wind, it is prudent to keep near the coast, from the Sambilangs a considerable way to the southward, then edge out, to round the West end of the North Sand, and get a sight of the Arroas; afterward, work near the edge of the sand to benefit by the tides, and preserve moderate depths for anchorage, borrowing on it occasionally to 10 or 11 fathoms.

To sail from the strait, toward Madras or the Coromandel Coast in the N. E. monsoon;

SHIPS from MALACCA STRAIT, bound to Madras or the Coromandel Coast, during the N. E. monsoon, should keep near the Malay side and the adjacent islands, until they reach Junkseylon; which, with the islands off its southern extremity, may be rounded at any convenient distance. From Junkseylon, a course to pass betwixt the Car-Nicobar and the South end of the Little Andaman may be adopted, if early in the season; or the Sombreiro Channel may be chosen at discretion, if not bound to the northward of Madras; and in December and January, care must be taken to fall in with the coast a little to the northward of the intended port.

and in the S. W. monsoon.

Ships bound to Madras in the S. W. monsoon, must adopt the Sumatra side of the strait, keeping near the Pedir Coast, to benefit by the westerly or eddy current contiguous to it; they ought to go out by the Surat Passage, if the weather is favorable, or after reaching Achen, they may proceed close along the East side of Pulo Brasse, and round the islets at its North end. The passage will *generally* be tedious in this monsoon, after clearing Achen Head, although some ships have reached Madras in 14 or 15 days from that place, during the strength of the S. W. monsoon, by taking advantage of every favorable change of wind to get to the westward, and tacking with those changes as most expedient.

Also toward Ceylon during the S. W. monsoon;

SHIPS bound to Ceylon in this season, after clearing Achen Head, must endeavour to get to the South of the equator, giving the islands off the West coast of Sumatra a wide birth, if possible. Having got into S. Easterly winds, a westerly course must be pursued until on the meridian of the intended port; then a North course for it, may be followed, observing to fall in with the land on the West side of Point de Galle, if bound there; or with the south-east part of the island, if bound to Baticolo or Trincomale; for strong westerly winds and easterly currents, prevail along the South coast of Ceylon during the S. W. monsoon. It is very seldom that any ships sail from Malacca Strait to Madras or Ceylon in this season, and it may sometimes be found impracticable to accomplish the passage, in ships which sail indifferently by the wind.

and in the N. E. monsoon.

Ships bound to Ceylon during the N. E. monsoon, will generally experience favorable weather, and a fair wind. In proceeding out of the strait, they may pass on either side of Pulo Pera at discretion, and borrow toward Pulo Rondo, or toward the South end of Great Nicobar, as circumstances render expedient; should they fall accidentally to leeward of

Pulo Rondo, they may pass safely through the channel formed betwixt the ledge of rocks lying about 2 miles to the southward of it, and Pulo Way. After taking a departure from Pulo Rondo, or the South end of Great Nicobar, a direct course may be steered to fall in with Ceylon to the northward of Trincomale, if bound to that port. If bound to Point de Galle, Colombo, or the Malabar Coast, the land should be made to the northward of the Little Basses, particularly in the night; for there, the lead, if kept going, will give sufficient warning before the land is approached too close. In day-light, you may steer direct for the Great Basses, if the wind blow steady at N. Eastward, allowing for a probable southerly current running along the coast; and as this current generally prevails in the strength of the N. E. monsoon, along the East side of Ceylon, it is prudent, even in day-light, to fall in with the coast a little to the northward of the Great Basses; or to the northward of the Little Basses, when the wind hangs northerly, or when it inclines to be light and variable. After rounding the Basses, ships bound to the Malabar Coast must keep close to Ceylon, as if bound to Point de Galle or Colombo; and they ought to coast along nearly to the latter place, before they stretch off for Cape Comorin. Where to make the Island, &c.

## 2d. COAST OF PEDIR, WITH SAILING DIRECTIONS; AND FROM DIAMOND POINT TO THE ARROAS, ALONG THE SUMATRA SIDE OF THE STRAIT.

THE NORTH PART of SUMATRA, called the Coast of Pedir, extends from Point Pedro, the northernmost point of the island, nearly E. $\frac{3}{4}$ S., about 44 leagues to Diamond Point, its eastern boundary. This coast is low in several places close to the sea, but the country a little inland is all very high, with some remarkable mountains. Coast of Pedir.

TANJONG BATOO, generally called Point Pedro, situated about 4 or 5 leagues E. N. Eastward from Achen Road, terminates in a gentle slope, and is covered with large trees; the coast between it and Achen, may with safety be approached to 10 fathoms, but the point must not be borrowed on under this depth, as it is fronted by foul ground. Yet in passing Point Pedro during the night, it is not advisable to go outside of 16 or 17 fathoms, that Pulo Malora may have a proper birth to the northward; for this small island lies to the N. Eastward of Achen Road, and rather nearer to Point Pedro than to Pulo Way. Tanjong Batoo Pootie, is known by a large white rock off it, and bears E. 5° S. from Tanjong Batoo, distant about 4 leagues. Between these points lies Deep Bay, or Back Bay, having soundings of 20 fathoms in it, about 1 or $1\frac{1}{2}$ mile off shore; but there is no ground, when the distance from it exceeds 4 or 5 miles, more particularly about Tanjong Batoo Pootie, the coast is nearly steep to. Tanjong Batoo, and adjacent coast.

PEDIR POINT, in about lat. 5° 29′ N., lon. 96° 10′ E., bearing from Tanjong Batoo Pootie S. 67° E., distant 5 or 6 leagues, may be known by some bushy trees on its extremity, by the Golden Mountain, which bears from it W. by S. $\frac{1}{2}$ S. nearly, and by the land trending from it to the S. S. Eastward. In sailing from Achen along this part of the coast, keep near it, where in most parts, you may anchor if necessary, for there is seldom any hidden danger above $\frac{1}{2}$ a mile from the shore; and as the bank is steep to, with westerly and variable currents outside, here you are more liable to calms than in soundings, and may lose much ground by getting out of anchorage. Geo. site of Pedir Point, to sail from thence

Pedir Point may be borrowed on to 10 fathoms, within $\frac{1}{2}$ a mile; from hence, the course is S. S. E. and S. E. by S. to the road of Pedir, where the anchorage is in 10 fathoms, with the point bearing N. W., Golden Mount W. $\frac{1}{2}$ N., and the entrance of the river (which is to the Road.

not conspicuous) S. ½ W. to S. S. W., distant 1½ or 2 miles: or small ships may anchor in 7 fathoms about a mile off shore. Boats can enter the river at low water neap tides, but not until a ¼ flood on the springs, for then, there is a considerable surf on the bar. Pedir, exports great quantities of beetle-nut, cultivated here, and pepper brought from places of less consequence, which makes the trade of the whole coast take its name after this port. Pedir Village is in lat. 5° 22½′ N., and 26 miles East of the Golden Mountain, or in lon. 96° 15′ E.

Geo. site of Pedir.

Oujong Rajah Point.

OUJONG, or UJAM RAJAH POINT, bears from Pedir Point E. 16° S., distant about 12 leagues, and in working between them you may stand into 12 or 14 fathoms, although in some places these depths are not above ½ a mile from the shore; when near Oujong Rajah Point, go not under 20 fathoms, for contiguous to it, there is *said* to be foul ground. There are several villages along this part of the coast; Burrong, in lat. 5° 20′ N., about 5 or 6 miles E. S. Eastward from Pedir, situated near the entrance of a river, from whence the bushy tree on Pedir Point is just visible from the deck, has now become the chief place on the coast for trade, and is much frequented by Chulia vessels from the Coromandel coast. Burrong, is also called Gingham, but Gingham River stretches westerly from it toward Pedir. Ayerlaboo is an inconsiderable place, 3 miles eastward from Burrong, and Sawang, 4 or 5 miles farther, may be known by a grove of trees, very conspicuous. Merdoo, about 4 leagues eastward of Sawang, may be known by some huts and straggling trees, and a *large tree* on the point of the river, the entrance of which is not conspicuous; but a run of water, resembling a path in the valley between the hills, appears very plain in the rainy season. Sambelangan, about 2 leagues to the eastward of Merdoo, has a small fort on each side of the river, and lies in a bight betwixt Merdoo Point and Oujong Rajah Point; ships may anchor at any of these places, the coast being bold and safe to approach, but excepting Burrong and Sambelangan, these villages produce very few articles of trade. The anchorage at Sambelangan is in 12 to 15 fathoms, with Merdoo Point bearing W. by N., Oujong Rajah Point E. by N., distance off shore 1 or 1½ mile.

Coast and villages adjacent.

Passangan Point.

PASSANGAN POINT, bearing from Oujong Rajah Point E. 13° N., distant 6 leagues, is bluff, known by a grove of cocoa-nut trees on its extremity, which is divided by the mouth of a river; the coast between these places is much indented, soundings do not extend off above 2 miles, and 8 or 9 miles eastward from Oujong Rajah, are very irregular; you then find a bank about 1 or 2 miles from the shore, with 10 fathoms on its edge all the way to Passangan. This bank, shoals gradually to the shore, but ½ a mile beyond its verge there is no bottom at 50 or 60 fathoms.

Elephant Mountain.

Elephant Mountain, in lon. 96° 50′ E., called also Friar's Hood, bearing S. W. ½ S., when in one with Passangan Point, is situated several leagues inland, and may easily be known by its abrupt and singular aspect: it will point out when Passangan Point is approached, which may be rounded within the distance of a mile with the land wind, for although the sea generally breaks upon the point, there is no ground at 30 fathoms about 2 cable's lengths outside of the breakers.

Passangan River, falls into the bay, to the eastward of the point, off which, you may anchor in 15 to 20 fathoms about ½ a mile from the shore, with the point bearing W. by N.

Rocky Point and contiguous coast.

GUM GUMA, or Rocky Point, bears E. 5° N. from Passangan River, distant 4 leagues, and the soundings between them, do not extend far out: in working here, stand in to 20 fathoms, but not under this depth off Rocky Point, (which is known by a clump of trees at its extremity, somewhat higher than the rest) as a reef projects from it.

Geo. site of Tooloo-Samwoi Point.

Tooloo-Samwoi Point, is in lat. 5° 13′ N., lon. 97° 22′ E., about 2 leagues eastward of Rocky Point; the coast between them is very steep, having 25 fathoms about ½ a mile off, and the water shoals very quick from that depth toward the shore. On the extremity of the

former point, there is a square clump of trees, which makes it resemble an island when first seen.

TOOLOO-SAMWOI, or Tulosamaway, in lat. 5° 10′ N., at the bottom of the bay to the S. Eastward of the point, is a place of some trade, where there is a fort and village near the mouth of the river. Ships which stop here to trade, or to procure water and refreshments, must be constantly guarded against the perfidy of the natives, and those of the other towns along this coast, who have been too successful, at various times, in surprising small ships or two-masted vessels, and massacreing their crews. Tooloo-Samwoi. Caution requisite.

If bound into the road, from westward, round the point at any convenient distance, keeping the western side of the bay close aboard, if the wind be westerly; and anchor in 10 or 11 fathoms with the point N. 15° W., Passier Grove S. 74° E., and the High Table Mountain to the S. W. of Diamond Point S. E. by S., about ½ a mile from the western shore.

DIAMOND POINT, or TANJONG GOERE, in lat. 5° 18′ N., lon. 97° 48′ E., by chronometers, and 11 or 12 leagues to the eastward of Rocky Point, forms the eastern extremity of the coast of Pedir; the trees on it being of unequal height, and higher than those on the land contiguous, make the point appear like a low sloping island when viewed at a considerable distance, but the ground is very little elevated above the sea at high water spring tides. Geo. site of Diamond Point; coast and banks around.

Inland, there is a High Table Mountain to the S. S. Westward, which is seen from the offing in clear weather.

Betwixt Tooloo-Samwoi and Diamond Point, lies the river and village of Courtay, or Curtoy, and the whole of this part of the coast is clear of danger, except when Diamond Point is approached; for a shoal, with 1½ and 2 fathoms on it, bears about W. ½ S. from the point, and North from the village Courtay, distant 2 or 3 miles from the shore. Close to this shoal on the outside, there is 11 fathoms, and between it and the shore, 5, 4, and 3 fathoms. Diamond Point is fronted by a reef, which extends about a mile out, on the N. W. side of the point; therefore, borrow no nearer the coast than 2 miles, to avoid the reef; nor come under 12 fathoms, in passing the point, or the shoal to the westward, for the depths decrease suddenly afterward.

From Diamond Point, the coast on the West side stretches W. S. W., and on the East side about S. S. E., it being the principal headland on the Sumatra side of the strait. Although the tides along the Pedir coast are weak, and only perceptible near the shore, (there being a current generally setting to the westward in the offing during the S. W. monsoon) they begin to set strong abreast of Diamond Point, the flood to the eastward and the ebb to the westward. It is high water on the Pedir Coast, at 10½ hours, on full and change of the moon, about the western part; and at 12 hours, off Diamond Point. The soundings are not always regular about this point, the depths being from 20 to 35 or 40 fathoms, about 3 miles, to 5 or 6 leagues off: soundings extend from the point across the strait to Pulo Pera, and from thence to the Ladda Islands, and to Prince of Wales' Island. A little outside of Pulo Pera, there are no soundings. Tides, and soundings.

SUMATRA COAST, from Diamond Point to the Arroa Islands, is all low and woody, fronting the sea, containing several rivers and villages, frequented only by coasting proas, or other small vessels; consequently little known to Europeans. Sumatra coast from Diamond Point to the Arroas;

Caution is necessary in sailing along this coast, as it is fronted by some shoals; upon 1 of which H. M. S. Hesper got into 3 fathoms, on the 14th of April, 1816. She observed at noon in lat. 4° 37′ N., and steered N. W. ½ N. 24 miles, keeping about 4 miles off shore in from 18 to 22 fathoms water till 5 P. M., Diamond Point then in sight from the mast-head bearing N. W. a little westerly, distant about 20 miles, sounded in 7 fathoms, and shoaled to

3 fathoms in hauling out N. N. W., deepening when over the shoal gradually to 19 fathoms. About 1½ mile within the track of the ship, the water appeared shoaler than the place she passed over.

The flood sets along this coast to the S. E. and the ebb to the N. W., varying a point or 2, according to the direction of the coast; the ebb is generally strongest, and of longer duration than the flood, but seldom runs above 1½ mile per hour, when the distance from the shore is considerable. The soundings along the coast, are sometimes irregular, with foul ground in many places under 30 fathoms; but outside of this depth, the bottom consists of mud, or mud and sand; and it is of the same quality, in the middle of the strait.

with sailing directions. Although the Malay side of the strait is preferable to the other, yet if a ship happen to be off Diamond Point with a steady N. W. gale, she may steer along the Sumatra coast at a moderate distance, toward Pulo Varela and the Arroas. This route is shorter than the common one along the Malay side; and the best depths to preserve after passing Diamond Point, are from 30 to 36 fathoms, not borrowing under 20 or 25 fathoms toward the Sumatra shore, in working; but she may stand out into the middle of the strait, to any distance required.

The coast may be approached occasionally, in some places, to 12 or 14 fathoms, if you intend to anchor off any of the rivers.

Geo. site of Pulo Varela. PULO VARELA, in lat. 3° 47′ N., lon. 99° 36½′ E., bearing from Diamond Point S. 49° E., distant 140 miles, and about 5½ or 6 leagues from the Sumatra shore, is high, and may be seen at 8 leagues distance. At its South end, in a little cove, water may be procured from a small run, but not always in sufficient quantity; and you may anchor at the S. E. part of the island in 12 to 18 fathoms, about a mile off, and procure plenty of firewood: off the N. W. point, lies an islet or rock, and another off the South end. Boats landing here, ought to be guarded against the perfidy of the Batoo-bara people, from the adjacent coast, who frequently lurk about it with a few proas, in search of plunder, or to dry their nets; and they have more than once, massacred, or made slaves of crews of boats, which landed to procure wood and water.*

The depths near the island on the inside, are 18 to 24 fathoms, decreasing toward the Sumatra coast, but not always regular, as several banks are known to exist here; of which, the following is dangerous.

Varela Reef. VARELA REEF, bearing W. ¾ S. from the island, distant 5 or 5½ leagues, has sometimes breakers on its southern part, from whence a long spit, or bank of sand, extends to N. N. Westward. The American ship, William, Capt. Bodin, on the 2d of September, 1811, shoaled to 7 fathoms hard sand on this bank, and shortly after saw breakers bearing S. E. by E., which were brought to bear E. ¾ N., distant about 2 miles, when in one with Pulo Varela, the latter just visible from the deck, then in 12 fathoms water. Anchored afterward, in 7 fathoms on the bank, with the breakers bearing S. E. ½ E., and Pulo Varela E. by S., and after weighing, steered E. by S. 3 miles, then shoaling suddenly to 3¾ fathoms, steered W. N. W. and anchored in 6 fathoms, with Pulo Varela E. 2° N., a high grove of trees on Sumatra, thought to be at the mouth of Delly River W. S. W. ½ S., and the breakers S. S. E. After weighing a second time, steered E. by S. about 2 miles, and shoaling again to 3 fathoms, wore to the W. N. W. and N. W., deepening very slowly till Pulo Varela bore East, then had 7 fathoms, and steered N. E., increasing the depth to 9, 10, 12, and 13 fathoms in a few casts of the lead.

Sundry banks, thought not to be dangerous. There is a bank about 4 or 5 miles to the S. W. of Pulo Varela, on which the American ship, William, had 9 fathoms; and 10 miles to the W. S. Westward of the island, and 4 or 5 miles in a S. E. direction from Varela Reef, she had 9 fathoms on another bank: on a

* In 1788, the boat belonging to the ship, Dadaloy, Capt. Richardson, was cut off at this island, where she was sent to procure water.

third bank, about 4 or 4½ leagues S. by W. from the same island, she had 9 and 8 fathoms, with soundings from 18 to 26 fathoms between them.

Another bank, bearing about N. W. by N. 3 leagues from Pulo Varela, is *said* to have only 2 fathoms on it, but 7 or 8 fathoms, appears to be the least water that has been found in the situation assigned to it. About 4 leagues to the N. Eastward of Pulo Varela, the depths are from 32 to 35 fathoms.

Geo. site of the Two Brothers.

TWO BROTHERS, bearing nearly N. N. E. and S. S. W., 4 or 5 miles from each other, are covered with wood, and much lower than Pulo Varela; the northernmost, called Pulo Pandan, is in lat. 3° 24′ N., lon. 99° 54′ E., bearing from Pulo Varela S. E. ½ S., distant 9 leagues. The southernmost called Salanama, is largest; the soundings about 4 or 5 miles to the northward of Pulo Pandan, are 26 and 27 fathoms; but to the N. W. and westward of it, at the distance of 4 to 8 or 9 miles, the American ship, William, had from 7 fathoms the least water, to 9 or 10 fathoms, sometimes sandy bottom, at other times soft mud.

To sail from Diamond Point to the Arroas.

From Diamond Point, having proceeded along the Sumatra side of the strait, you may pass on either side of Pulo Varela, giving a birth to the reef, if you pass inside, then steer toward the Two Brothers, which pass to the eastward, as the channel betwixt them and the coast is not frequented; besides, the passage outside, is more direct toward the channel formed between the Arroas and North Sand. The Long Arroa bears about S. E. by E. 18 leagues from the Northernmost Brother, and after passing the latter, steer more easterly, to make the Arroa bearing well to the South, or to get soundings on the western end of the North Sand; then, proceed through the channel between the North and South Sands, toward Parcelar Hill.

Batoo-bara.

BATOO-BARA, opposite to the Brothers, is situated on the bank of a river, from whence the natives export in their proas to Prince of Wales' Island and Malacca, rattans and some other articles of trade; the river is navigable by small vessels at high water, but the natives being perfidious, this place is seldom visited by Europeans.

Sumatra coast from thence to Siak, and the contiguous channel.

From hence to Siak River, nearly opposite to Malacca, the coast of Sumatra is little known; it is all low land, the trees only appearing above water, with several rivers and shoal banks stretching out a considerable way from the shore in some places. The channel along this coast, to the southward of the Arroas and South Sand, is said to be wide and safe: several vessels having fallen to the southward of the Arroas during N. Westerly winds, and leeward currents, proceeded through it, and had generally soundings from 7, to 10, 12, and 16 fathoms; but the land being low and level, destitute of proper marks, no large ship ought to adopt this channel, until it is surveyed, or better known; and a boat kept sounding a-head, will be requisite, should a ship be obliged to push through it in a case of emergency.*

The East and West channel, formed between the sands from the Arroas to Parcelar Hill, and then betwixt the Malay coast and South Sand, is frequented by ships of every description; and it seems far preferable to that along the Sumatra side of the strait, *at least*, until the latter is well explored. It has been said, that 7 leagues W. by N. from the Long Arroa there is a bank even with the water's edge, but most probably, no such bank exists.

* Some years back, a Danish vessel, unacquainted with the strait, passed to the southward of the Arroas and South Sand; then crossed over to Malacca, *it is said*, without experiencing any indication of danger. This channel adjacent to the coast of Sumatra, has been lately examined in some degree, by one of the Company's marine vessels; but no information of the result, has yet been transmitted to this country.

## 3d, MALAY SIDE OF THE STRAIT, FROM JUNKSEYLON TO PRINCE OF WALES' ISLAND, WITH SAILING DIRECTIONS.

Malay coast and islands from Junkseylon to Queda, with directions for the Inner Passage.

MALAY COAST, between Junkseylon and Prince of Wales' Island, is fronted by many islands of various sizes; and inside most of the groups, and between them, there are passages for small vessels, but large ships generally sail outside.

A small vessel proceeding from Junkseylon during the N. E. monsoon, may pass on either side of the outer groups to the S. E. of Pulo Panjang, as most convenient: the first of these, called the Vogels, is a group of small islands about 6 leagues from Panjang, with 14 and 16 fathoms water inside, and 25 to 30 fathoms outside of them.

The Pilgrims, is the next group, about 4 or 5 leagues farther to the S. Eastward, which is composed of very small islands, and bears nearly East about 9 leagues from the Brothers off Junkseylon. Some persons call the largest island of this group, Slipper Island, but Sapata or Slipper Island, seems to belong to a group of 2 or 3 islands, situated 4 or 5 leagues farther to the S. Eastward. The latter are called Pulo Allang by the Malays, but navigators give to the largest, the various names of Pulo Mohea, Tupia, or Slipper Island. Betwixt these islands, and many others which lie contiguous to the coast, the depths are from 20 to 12 fathoms; and there is good anchorage amongst them: some articles of refreshment may be got at Pulo Telibon, which lies close to the shore in lat. 7° 14′ N., where vessels may anchor in 4 or 5 fathoms, off its western side. From Telibon, a chain of high rocky islands stretches along the coast to the North end of Pulo Trotto, having a good passage of 8, 9, and 10 fathoms on the outside; and if bound to Queda, a small vessel may pass inside of the large islands Trotto, Lancava, Ladda's, between them and the main, in various soundings from 4 or 5 fathoms near the coast, to 8 and 10 fathoms by keeping nearest these islands; for the shore opposite, is lined by a shoal mud bank, extending a great way over toward the islands. From thence, she may haul into 5 or 6 fathoms water near the coast, and anchor in 5½ or 6 fathoms, with Queda River's entrance E. by N. Northerly, Elephant Mount N. E. ¼ N., Boonting Islands about S. S. E., and the Rocky Islands called Payers or Peers about 4 or 5 leagues to the westward, bearing W. by S. Southerly. There is very little trade here, since the establishment of the English at Pulo Penang, but refreshments may be procured. Queda Town, in lat. 6° 6′ N. is built on both sides of the entrance of the river, which although fronted by a mud flat, has sufficient depth of water within, for sloops and brigs to anchor, where the Rajah resides, about 10 or 12 miles above the town. The tide rises here, about 5 or 6 feet, and flows to nearly 12 hours at full and change of the moon. Elephant Mount, is situated near the shore in lat. 6° 10½′ N., and in lat. 6° 21′ N. lies Parlis River, off which the coasting vessels anchor in 3 fathoms, to the S. W. of 4 islands that lie near the main, and with a Haycock Mount bearing to the N. N. Eastward, as the mud bank lining the coast is here very flat.

Little Passage.

LITTLE PASSAGE, is preferable to that last mentioned, inside of the principal islands; and if you intend to proceed by it, after rounding the Brothers at 3 or 4 miles distance, steer East and E. by S. for Pulo Mohea, which will carry you outside of the Pilgrims, and about 8 or 9 miles to the eastward of the Guilder Rock, if there be no oblique current.

Guilder Rock.

SANGALD, ST. GELDE, or GUILDER ROCK, in lat. 7° 10′ N., is a reef elevated about 2 or 3 feet above water, having 30 and 33 fathoms to the N. Eastward, and from 36 to 40 fathoms water very close to it on the outside; it bears about South 5 leagues from the Pilgrims, and the same distance W. by S. ½ S. from Pulo Mohea, and requires great care, if

soundings are got near it in the night, particularly, as it is said only to be visible in the N. E. monsoon or dry season.

Having approached Pulo Mohea, it may be passed on the West side, at 4 or 5 miles distance, by which the Guilder Rock will have a birth of 3 leagues to the westward: from Pulo Mohea steer about S. E. by E. for Edam, which is the easternmost of 3 small islands of middling height, situated nearly midway between Pulo Bouton and Trotto; in passing betwixt Trotto and Edam, borrow on the latter, to avoid the Black Rock that lies 4 or 5 miles off the N. W. side of Trotto, nearly even with the surface at low water. There is also a dangerous reef of rocks fronting the S. E. end of Bouton, on which the sea breaks, having a passage with 16 fathoms water between them and Edam Islands, which may be chosen if necessary. and other dangers adjacent to the Passage.

From Edam, steer S. Easterly for the S. W. end of the Laddas, which pass in 16 fathoms if the wind be North or N. Easterly; from hence, steer about E. by S. for the Peers, and pass to the westward of them, giving a birth of 3 miles to Rotta, the westernmost islet. Having passed the Peers, steer E. S. Easterly for the Boonting Islands, and pass them on the outside at a moderate distance, if bound to Prince of Wales' Island.

The passage between Trotto and the Laddas is also safe, with depths from 14 to 9 and 8 fathoms, and along the West side of the former, the depths are 7 and 6 fathoms near the shore: about $\frac{1}{3}$ passage over from the S. E. point of Trotto, lies a Pyramidal Rock with 15 fathoms close to it, and near the point there is a smaller rock and an islet. Having passed these, borrow afterward near to the Ladda shore, to give a birth to the shoal mud bank that stretches from the main land far over toward the islands.

LANCAVA, or LOUCAVA GROUP, consists of 3 large islands, and many smaller ones bordering them to the East and Southward; and they extend nearly N. W. and S. E. from the South part of Pulo Ladda,* in lat. 6° 8′ N., to the North end of Trotto in lat. 6° 49′ N. They are high bold islands, particularly Lancava the central 1, which has on it a high peaked hill: there is also upon Pulo Ladda, to the S. Eastward, a peaked hill resembling the former, in about lat. 6° 21′ N., lon. 99° 50′ E., which is generally called Ladda Peak. Lancava Islands. Geo. site of the Laddas.

The Laddas, which form the South and East parts of the group, are high rugged islands, of barren aspect; and betwixt the 2 largest islands, situated at their southern extremity, there is a safe harbour, called Bass Harbour, by Captain Forrest. The channel leading to it from the N. W., is along the S. W. end of Lancava, where the depths are from 7 to 12 fathoms; and there is from 4 or 5, to 9 and 10 fathoms water, in the channel betwixt the islands leading into the harbour from the southward. The South part of Lancava, about 3 or 4 miles to the northward of Bass Harbour, is partly cleared, and inhabited by Malays and Chinese; but there being no trade at these islands, the harbour is not frequented.

Trotto, the northernmost large island of the group, has a cove or small harbour, at its N. E. end; and the channel that separates Lancava from this island, contains soundings from 8 to 14 fathoms, as mentioned above. About 3 or 4 leagues outside of these islands, the depths are from 24 to 30 fathoms, and close to them from 8 to 12 or 16 fathoms, but not very regular. There are tides among, and inside of them, but currents prevail frequently in the offing, setting mostly to the northward in the S. W. monsoon, and to the southward during the N. E. monsoon.

* Captain Forrest calls the large central Island Pulo Ladda, which *generally* bears the name Lancava; and to the easternmost large island, *commonly* called Pulo Ladda, he gives the name of Lancaway. Strangers landing on any of these islands, ought to be cautious if they penetrate inland, for they may be liable to see some snakes, which are here very large. When the Princess Royal's boat landed on Trotto, the crew killed a snake 22 feet in length, the skin of which I afterward saw at Canton.

Geo. site of Pulo Bouton.

PULO BOUTON, is formed of 2 large and high islands, very near each other, with some contiguous islets, and a reef of rocks off their S. E. extremity. The large islands are both high, and the easternmost is formed of a regular sloping pyramidal mountain, *generally called* Bouton Dome, which may be seen about 17 or 18 leagues. By mean of observations, taken when passing at various times, I made the Dome in lat. 6° 33′ N., lon. 99° 20½′ E.,* or 19½ miles to the eastward of the meridian of Pulo Pera; and the body of the 2 islands (which appear as one when seen from the westward) in lat. 6° 34′ N.

This group, is farther from the coast than any of the other islands which front the eastern side of the strait; the depths close to Pulo Bouton, are from 17 to 26 fathoms; 3 or 4 leagues outside of it from 30 to 35 fathoms; and midway between it and Pulo Pera, generally from 40 to 50 fathoms.

Geo. site of Pulo Pera.

PULO PERA, in lat. 5° 42′ N., lon. 99° 1′ E.,† is a high round barren rock, situated nearly midway between Diamond Point and the coast of Queda, and may be discerned 6 or 7 leagues from a ship's deck. At leaving the strait, sometimes a departure is taken from this island, and when the weather is cloudy, during the S. W. monsoon, it is not unfrequently the first land seen after running into the entrance of the strait; for Pulo Rondo, or the South end of the Great Nicobar, is not always discerned in passing.

This island being steep to, with soundings from 40 to 50 fathoms very near it all round, should be avoided, in the S. W. monsoon, particularly; for then, calms and faint airs are liable to prevail in its neighbourhood, during which, some ships have been carried by the currents toward it at different times, and were obliged to anchor in deep water, to prevent being driven against the steep rock. The soundings to the distance of 5 or 6 miles from it, in all directions, are from 40 to 60 fathoms; but 6 or 7 leagues to the westward of it, there is none to be got with 60 or 70 fathoms line.

Prince of Wales' Island.

PRINCE OF WALES' ISLAND, called by the natives Pulo Penang, its centre bears from Pulo Pera E. 13° S. distant 25 leagues; and the soundings decrease regularly from 45 or 50 fathoms near the latter, to 30 and 25 fathoms within 5 or 6 leagues of the former, which extends from lat. 5° 16′ to 5° 30′ N., being nearly 5 leagues in length, and 7 or 8 miles in breadth; the West coast forms a small indentation, with a space of woody low land fronting the sea, and 2 small islands adjacent to the S. W. point, the northernmost of which is bold to approach, having from 5 to 7 fathoms very near it: opposite to this islet, water may be got under a point of the principal island.

The N. W. end of the island is high uneven land, and excepting the South part, and the eastern side, where the town is built, and where there is a considerable track of low land cultivated contiguous to the sea, the rest of the island is all high, and covered with trees. When viewed at a great distance from the offing, it has a regular oblong appearance, discernible about 20 leagues in clear weather.

About 5¼ miles directly West from the Fort Flagstaff, stands the mountain on which signals are displayed for ships approaching the island; by mean of trigonometrical, and barometrical admeasurement, I made it to be 2170 feet in perpendicular height above the level

* Captain Heywood made it in lon. 99° 20′ E., by lunar observations and chronometers.

† From the S. part of Junkseylon, I measured 0° 38½′ E. by chron. to Pulo Pera, making it in 98° 58½′

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| From Malacca | 3 | 10½ | W. | do. | do. | 99 | 4¾ |
| From the South end of Nicobar | 5 | 1½ | E. | do. | do. | 99 | 1½ |
| From Golden Mount | 8 | 12 | E. | do. | do. | 99 | 1 |
| From Malacca, Captain Mackintosh | 3 | 15 | W. | do. | do. | 99 | 0 |
| From Madras, Captain P. Heywood | 18 | 39 | E. | do. | do. | 99 | 0½ |

Mean. 99° 1′ E. Lon.

The mean of observations in my possession, taken by 7 other persons, correspond with this mean, placing Pulo Pera in lon. 99° 1′ E.

of the sea; and at a small distance from it, an adjoining summit appeared to be about 60 or 80 feet higher than the signal mountain.

This island was presented by the King of Queda to Captain F. Light, and taken possession of by him for the use of the East India Company in 1786; the Company have also obtained a grant, of a considerable track of the main land fronting the island, which is all low near the sea, except a small hill a little inland, contiguous to Praya River.

Geo. site of the Fort.

Fort Cornwallis, is built on the N. E. point of the island, close to the town, which is called George Town by the Europeans, or Tanjang Panaique by the Malays, and contains 4000 or 5000 inhabitants. The principal articles exported, are pepper, beetle-nut, rattans, tin, and some gold, brought here from the main, from Sumatra, Java, and other islands to the eastward, by the Malay proas; and for which they receive opium, piece-goods, arrack, dollars, &c. Water and firewood may be procured here, at moderate prices; also bullocks and poultry are brought from the coasts of Perah and Queda, which sell high, and are scarce when the harbour abounds with ships. Most of the trade of Junkseylon, Queda, Sanlangore and other Malay ports, is now concentrated here; and very little business can be done at any of those places.

The Flagstaff of the Fort, by good observations, I made in lat. 5° 24½′ N.,* lon. 100° 21½′ E., by mean of lunar observations, and 2° 1½′ E. from the South end of Junkseylon by chronometers.

The Harbour, is nearly 2 miles in breadth from the Fort Point to the main, with soundings of 12 to 14 fathoms in the middle, 6 and 7 fathoms near the Malay shore, and 9 or 10 fathoms near the Fort Point, which is pretty steep to. The best birth to moor in a large ship, is about ¼ mile to the southward of the point in 9 or 10 fathoms, and closer to the town in small vessels; as the tides are more regular here, than abreast of the point, where ships are liable to take turns in their cables, in tending.

Tides.

It is high water on the shore about 2 hours, on full and change of the moon, but the flood runs to the southward until near 3 hours in the middle of the harbour; the velocity of the tides, is from 2 to 3 knots during the springs, and the perpendicular rise, from 7 to 9 feet.

Directions for sailing into the harbour.

TO SAIL into the HARBOUR, all ships that come from the northward, approach it by the North, or Great Channel; and this channel, is preferable at all times for large ships, because the South Channel is dangerous to proceed through, without a pilot; or unless the navigator is acquainted with it, and his vessel not large.

If bound in with a westerly wind, steer for the North end of Prince of Wales' Island, which is high, bold, and safe to approach; if the wind is at N. E. or northward, borrow toward the Ladda Islands and Peers, and after rounding them at 2 or 3 leagues distance, steer between S. E. by E. and E. S. E. for the BOONTING ISLANDS. These are of moderate height, 4 in number, with an islet between them; and they extend along the Queda shore nearly North and South, about 4 or 5 leagues to the northward of the North end of Prince of Wales' Island. Pulo Boonting, the northernmost and largest, lies opposite to the High Land or Peak of Queda, the second is called Sesson, the third Pangel, the southernmost Bidan, which is in lat. 5° 45′ N., and to the E. S. E. of it, is the river Marboo, having a bank of shoal water stretching from it close to Bidan: the deepest water inside of this island is 4 and 5 fathoms, 6 and 7 fathoms inside of the others; excepting Pulo Boonting, which has only 2 or 2½ fathoms inside of it, being nearest to the shore. These islands may be approached to 14 or 15 fathoms in the night, or to any distance thought proper in the day, there being no danger but what is visible. Having passed them, the course is about S. S. E. to keep midway betwixt the North part of Prince of Wales' Island and the main,

* Captain P. Heywood made it in lat. 5° 25′ N., lon. 100° 21′ E. by mean of lunar observations, and 19° 59′ E. from Madras Flagstaff, by mean of chronometers in 4 different voyages.

for an extensive flat Bank or Bar, stretches from side to side, on which the deepest water is about mid-channel, or rather nearest to the Malay shore. The least water on this bank, is 4 fathoms at low water spring tides, very even soundings; yet, it is unpleasant passing over it in a large ship at low water, if drawing upward of 20 feet, particularly with much swell, but this seldoms happens.

The N. E. point of the island, is about 4 miles to the N. West of the Fort Point, having at a small distance outside of it, the rocky islet Pulo Teecoos, with some rocks around; when abreast of this islet, the water deepens gradually toward the harbour. The bay formed betwixt the Fort Point and the N. E. point, is occupied by a shoal mud flat, steep from 5 to 4, then 3 and 2 fathoms.

Steering toward the entrance of the harbour in day-light, Pulo Bidan, kept about N. by W. is a good mark: during the night, there is no danger running in when the weather is clear, and the land distinctly seen; for in such case, even with a contrary wind, persons a little acquainted may work into the harbour without fear, as far as Pulo Teecoos, or even a little farther.

When passing over the flat bank between the North part of the island and the main, the soundings are not a sufficient guide, as the depths are nearly equal from side to side, until either shore is approached within $1\frac{1}{2}$ mile; therefore, in the night, attend particularly to the appearance of the land, to enable you to keep in the proper track. The shore of the main, being low, and covered with trees, will not be so conspicuous as the high land of the island; consequently, the latter will generally appear nearest, when you are in mid-channel between them.

When Pulo Teecoos is approached, the water will gradually deepen, as you are then over the shoalest part of the bank, and ought to make short tacks in working up to the harbour, for here, the channel becomes more contracted than farther out. The rocks that project a little way from Pulo Teecoos, are steep to, and may be approached to 5 or $5\frac{1}{2}$ fathoms, at low water; and in $5\frac{1}{2}$ to 6 fathoms, will be proper depths to tack from the edge of the mud bank that lines the shore of the island, from thence nearly to the Fort Point. In standing toward the main, tack when the depths decrease a little under those found in mid-channel; abreast of the fort, and 2 or 3 miles to the northward of it, about 7 fathoms is a good depth to tack in from the Queda shore.

In the night, do not run amongst the shipping; unless well acquainted, anchor abreast of Pulo Teecoos, or betwixt it and the Fort Point, until day-light.

DEPARTING from the HARBOUR, large ships generally go out by the North Channel, even when bound to the southward, although this occasions a loss sometimes of 1 or 2 days, when Northwesters prevail in the S.W. monsoon. The directions given above, will answer either for sailing out, or in, by this channel.

South Channel and contiguous banks.

A large ship ought not to adopt the South Channel, unless a good pilot can be procured, for several ships have grounded on the sands which bound it, and were in danger;* navigators in charge of large ships, deeply laden, are therefore, in general, averse to go out by the South Channel.

On the West side, the South Channel is bounded by the Long Sand, which begins about $\frac{3}{4}$ of a mile to the southward of the Fort Point, and stretches nearly to the North point of Pulo Jerajah, having a small channel of 3, 4, and 5 fathoms betwixt it and the western shore.

Pulo Jerajah, to the southward of the Long Sand, and adjoining to Prince of Wales' Island, extends about 2 miles to the southward, and is a high bold island, rising in a pyramidal

* The Lowajee from Bombay bound to China, going out by the South Channel, with a pilot on board, and drawing 21 feet water, got upon the Praya Sand nearly at high tide; here, she lay 12 hours, and strained considerably, by heeling off the bank, and the danger would have been great, had she not fortunately floated on the following tide.

form, betwixt which and the western shore, there is 5 and 6 fathoms water in the small channel continued from the inside of the Long Sand.

The East side of Pulo Jerajah is bold, steep to approach, and forms the West side of the proper channel to the South of the Long Sand; farther southward, the S. E. end of Prince of Wales' Island, and Pulo Ramio off it, bounds the West side of the channel at its southern entrance, which are both safe to approach.

The South Channel is bounded on the East side by Praya Sand, the Middle Ground or Spit, and Kio Flat: Praya Sand extends about 2½ miles North and South, parallel to the Long Sand about ¾ of a mile distant; and the North end of it bears S. 15° E. from the Fort Flagstaff, distant about 2 miles, and is very steep to, having 9 and 10 fathoms at the distance of a cable's length: it should not be approached nearer than this distance, being the most dangerous part of the channel. Praya River extends a considerable way inland, with 2½ and 3 fathoms water at the entrance, which is about a mile N. Eastward of the North end of Praya Sand. The Middle Ground or Spit, is a narrow ridge of sand stretching about N. N. W. within ½ of a mile of the East side of the Long Sand; the narrow space between them is called the Bar, having 3¼ and 3½ fathoms on it at low water, and the least water on the Middle Ground at low water spring tides, is 17 feet. The South ends of the Middle Ground, and Praya Sand, join; and both terminate in the northern extremity of Kio Flat, a very extensive mud bank, which bounds the East side of the channel from thence to seaward, and is named from Pulo Kio, situated near the Malay shore. This flat is a soft mud bank, stretching from the coast nearly to the S. E. end of Prince of Wales' Island, having from 2½ to 3 and 4 fathoms irregular soundings on its edge, where it bounds the East side of the channel.

Buoys, were first placed on the eastern edge of the Long Sand, on each end of the Praya Sand, and on the North point of the spit, to point out the bar and channel: these having been destroyed or taken away by the Malays, were afterward replaced by beacons, which are also sometimes wanting.

SHIPS BOUND OUT, by the South Channel, generally weigh about ½ flood, and steer S. by E. and South, to enter the channel between the Long Sand and Praya Sand; when the bar is approached, it will be proper to keep near the eastern edge of the Long Sand, and the depth in crossing it is ¼ less 5, or nearly 5 fathoms at high water spring tides. When over the bar, a South course should be steered, the water will deepen instantly to 7 fathoms, and afterward shoal to 5½ fathoms betwixt the North end of Pulo Jerajah and Kio Flat. As soon as the North point of Pulo Jerajah bears to the northward, the depth will decrease to 6 and 7 fathoms, it will then be proper to haul near that island, and these depths will continue through the channel, in steering past the S. E. end of Prince of Wales' Island and Pulo Ramio, to seaward. The greatest depths, are near the East sides of the islands, which are steep to; but on the East side of the channel, the water shoals suddenly upon the edge of Kio Flat. After passing Pulo Ramio close on the East side, the course is about S. S. W. or S. by W., according to the set of the tide, to proceed through the fair channel, betwixt Kio Flat and the mud bank on the West side of the entrance. remarks for proceeding by it to sea.

The leading mark is, to keep the body of Pulo Jerajah on with the East end of Pulo Ramio, which will carry a ship fairly out: if Pulo Jerajah is shutting in with Pulo Ramio, she will be in the West side; and if entirely open with it, she will be in the East side of the channel.

## 4th. DIRECTIONS FOR SAILING FROM PRINCE OF WALES' ISLAND TO THE ARROAS, AND FROM THENCE TO PARCELAR HILL.

Directions for sailing from Prince of Wales' Island, along the coast to the southward.

FROM the S. W. end of Prince of Wales' Island, Pulo Dinding bears nearly S. S. E., distant about 60 miles, and the coast between them, which is mostly low and woody near the sea, forms a bight; but high mountains appear inland, in the kingdom of Perah. There is also some hills near the sea to the northward of Pulo Dinding, which greatly resemble it in coming from that direction, and have therefore, been called False Dinding.

The whole of the coast of Perah is lined by a shoal mud bank, extending out from 2 to 3½ leagues; the depth decreases suddenly on the edge of it, when under 15 fathoms, but you may occasionally stand into 9 or 10 fathoms in working, with the lead kept briskly going; it would be imprudent to borrow under these depths, particularly in the night.*

If abreast of the N. W. end of Prince of Wales' Island with a fair wind, steer along the coast at a moderate distance, in soundings from 16 to 25 or 30 fathoms; in working, you may approach the island to 10 or 12 fathoms, and the edge of the mud bank that fronts the coast between it and Pulo Dinding, may be approached to the same depths, in the day time. By keeping well in with the coast, the westerly current mostly prevailing in the offing, will be partly avoided; the winds may be also expected more favorable, and should it be necessary to anchor occasionally, this can be done with more convenience, than in deeper water.

Pulo Dinding;

PULO DINDING, in lat. 4° 16′ N., is high and woody, situated near the main, and appears with a hill at each end, when first seen; close to it on the S. W. side lies Little Pulo Dinding, with 2 islets at its western part near the South point, to the W. S. Westward of which, at 4 or 5 miles distance, there is a spit or bank of mud, probably not dangerous. We shoaled suddenly from 14 to 6½ fathoms on its edge, and although probably about 6 fathoms may be the least water on it, a proper birth ought to be given in passing. There is a shoal to the northward of Great Dinding, which is avoided by keeping out in 9 or 10 fathoms.

to sail to the anchorage.

At the East end of Great Dinding, there is fresh water near the ruins of a fort, where formerly the Dutch had a settlement. If you wish to procure water at this place, pass betwixt the northernmost Sambilangs and Little Dinding, where the depths are mostly from 20 to 26 fathoms. There is a rock above water, nearly midway betwixt Great Dinding and the Sambilangs, having a safe channel on either side, which is best avoided by attending to the tide, and steering close along the bold South shore of Dinding to the East point, where you may anchor in 8 or 10 fathoms close to the East of the point, or to the southward of it, as seems most convenient.

Sambilangs; Geo. site of the southernmost.

SAMBILANGS, i. e. NINE ISLANDS, situated to the southward of Dinding, extend 7 or 8 miles nearly N. E. and S. W.; they are mostly small, high bluff islands, covered with trees, and may be seen about 7 leagues. The South Sambilang, or outermost of these islands, is in lat. 4° 3′ N., lon. 100° 35′ E. bearing E. 5° N. from Pulo Jarra distant about 7 leagues. To the N. Westward of it about 1 or 1½ mile, there is a rock speckled *black* and

* The Alfred and True Briton, at 8 P. M. 29th of September, 1799, grounded on the edge of the bank, not far to the southward of Prince of Wales' Island, the South point of it bearing N. N. W., Saddle Island N. N. W. ½ W., off the low land on the Malay shore about 7 miles. From that time, they were employed carrying out their stream and kedge anchors, and heaving the ships up to them each tide at high water, through the soft mud, until the 4th of October, when both ships got fairly afloat. This case, evinces the propriety of not making too free with the edge of the bank in the night. See the directions in Section I. for sailing into the strait.

*white*, which appears *all white* when the sun shines on it; and about 2 miles to the N.N.W. of the same island, and 1 mile from the former rock, there is a *black* rock, not much elevated above water. These rocks should not be approached close in the night, being steep to, for the soundings near them, and 1 or 2 miles outside, are generally from 23 to 26 fathoms, and the same depths are found very near and amongst the Sambilangs. There is a safe channel inside of these islands, with sounding of 15 to 23 fathoms; and the channels betwixt some of them, are also safe, but rather narrow.

PERAH RIVER, extends a considerable way into the country, having a wide entrance directly East from the Sambilangs, but the middle and South side of the entrance is very shoal, dry in many places at low water; the shoal flat, continues to stretch along the coast about Tanjong Ooloor, (the point of land abreast of the Sambilangs) and from thence South, toward Salangore. The proper channel into Perah River, is to the S. Eastward of Pulo Dinding, by borrowing near the North point of the entrance, and keeping along the low bank on that side of the river, where the depths are irregular from 3 to 7 fathoms. The tides inside, have a velocity about 4 or 5 miles per hour during the springs. Perah River.

PULO JARRA, in lat. 4° 0′ N., lon. 100° 14′ E., bearing from the centre of Prince of Wales' Island S. 2° W., distant 27 leagues, is small, covered with trees, and may be discerned about 7 leagues. It is steep to, having from 33 to 36 fathoms very near it in every direction, and the same depths between it and Pulo Varela: mid-channel betwixt it and the Sambilangs, there is generally from 30 to 32 fathoms, decreasing to 25 or 26 fathoms near the latter islands. Geo. site of Pulo Jarra.

Although a ship may, at discretion, pass on either side of Pulo Jarra, the channel betwixt it and the Sambilangs is always prefered when circumstances permit, for the current often sets strong to the N. Westward in the middle of the strait, and calms are more prevalent there, than near the coast.

ROUND ARROA, in lat. 2° 49′ N., lon. 100° 49′ E., bearing from the South Sambilang S. 4° E., distant about 24 leagues, is a round rock, with some trees on it, that may be discerned about 6 leagues; having also 2 rocky islets close to it, which are visible 4 leagues, 1 to the northward, the other to the southward, with other straggling rocks around: this island, is the principal mark for the West part of the East and West channel, betwixt the sands. Round Arroa.

LONG, or GREAT ARROA, in lat. 2° 52½′ N., bears nearly N. W. by W. from the Round Arroa, distant 5 or 6 miles, and is about 1¼ mile in length, covered with trees, of a flat appearance, and not so high as the other. The Malay fishermen sometimes frequent this island, to fish and procure turtle; it is, therefore, proper, for boats landing here, to be on their guard. Water can be got in a cove with a fine sandy beach, on the N. E. side of the island. The Locko in 1787, sent her long boat to procure some, without success, for the Malays, *then* residing here, would not allow the boat to have any water, except they were paid for it. Long Arroa.

On the 30th of April, 1811, the William Pitt's boat landed here, and saw a small hut, which appeared to have been inhabited a short time before. Several springs of good water ran down deep valleys, which were lined on each side with cabbage trees; and the face of the island was covered with strong high grass. Had 10 fathoms water close to the sandy beach, but the small islets which front the Arroa, are mostly united by reefs of sharp pointed rocks, few of which are visible at high water, or at the distance ships pass: the tide appeared to rise on the rocks, about 10 feet perpendicular.

The Arroas ought not to be approached in the night, on account of the rocks adjacent, 1 of which, a *flat black rock*, very little elevated above the surface at high water, lies about 4 miles N. Eastward from the Round Arroa, and nearly East from the Long Arroa 6 or 7

and adjacent rocks.

miles. To the westward of the flat black rock 1 or 2 miles, between it and the Arroas, there is a *sunken rock* on which the sea sometimes breaks; the ship Seton, of Bombay, passed between this sunken rock and the flat black rock, in 1796, and carried soundings from 17 to 11 fathoms. About 2 miles N. Eastward from the Long Arroa, there is a Rock of considerable height above water, with regular soundings very near it, 8 and 9 fathoms mud; and within a mile of the N. W. and West sides of the Long Arroa, the depths are regular from 9 to 11 or 12 fathoms.

Channel to the southward of them.

Several ships steering for the Arroas, having been set to the westward of them by currents, lost much time working with northerly winds round the *long one*, and the black rock off it, where they generally found regular soundings over a soft bottom. The Lowajee, and other ships, which fell to the westward of the Arroas during northerly winds, went to the southward of them, and after passing the Round Arroa, hauled to the N. Eastward into the proper channel, having experienced various soundings from 7 to 11 fathoms to the southward of these islands.

To sail from the Sambilangs to the western edge of the North Sand.

BEING about MID-CHANNEL, between Pulo Jarra and the South Sambilang, or rather nearest the latter, to guard against westerly currents, steer about S. S. E., or S. 20° E., if you pass near the Sambilang, which will carry you well to the N. E. of the Arroas, but not too far on the North sand. Excepting a shingly spot in lat. 3° 20′ N., bearing South from the Sambilangs, with 13 fathoms on it, the soundings in this track are pretty regular, generally between 34 and 40 fathoms in a direct line from Pulo Jarra nearly to the Arroas; and 24 to 30 fathoms in a direct line between the South Sambilang and western extremity of the North sand.

When the winds incline at East or E. S. Eastward, keep near the Malay coast, in soundings from 20 to 30 fathoms, until 8 or 10 leagues past the Sambilangs, then steer more southerly to get soundings of 16 or 18 fathoms on the N. Western verge of the North sand; and as there is no danger on the N. W. and Western edges of the sand, it may be rounded close, by borrowing occasionally to 14 or 16 fathoms, and edging out to 20 or 24 fathoms as circumstances require, until the Arroas or Parcelar Hill is seen.

North Sand.

NORTH SAND, or NORTH BANK, is very extensive, consisting of various small patches or spits of sand, separated by considerable spaces of regular soundings from 8 to 12 fathoms. There are many dangers on the eastern part of the North sand, adjacent to the coast; the middle and southern parts are also dangerous, but the N. W. and western edges may be approached with safety, if the lead is kept briskly going. The N. W. extremity of the sand is in lat. 3° 13′ N., from hence its outer edge stretches S. S. E. ½ E., and S. E. by S., about 7 or 8 leagues, then more easterly toward the South entrance of Callam Strait.

The depths decrease quickly in approaching the N. Western extremity of the North sand, from 28 or 26, to 10 fathoms or less, on the spits that form this part, which bears N. N. Eastward from the Arroas, 8 or 9 leagues distant. On the spits which form the N. W. and western boundary of the sand, there appear to be no danger; I have generally found the depths on the *outer* spits to be 9 and 10 fathoms, when standing over them with a working wind; 7½ or 8 fathoms on the spits a little farther on the bank to the eastward; and from 11 to 14 or 15 fathoms in the channels between them. When the Round Arroa is seen from the mast-head bearing S. S. W. or S. S. W. ½ W., you are on the N. W. edge of the North sand, and will pass over spits of 8 and 10 fathoms. Round Arroa S. S. W. ¼ W., seen from the fore-yard, we had 7¼ fathoms. Round Arroa from the fore-yard S. W. ½ S., and Parcelar Hill E. by S. ¼ S., just visible from the poop, had 7 fathoms hard sand.

To sail along its western edge

As there seems to be no danger on the spits that form the exterior boundary of the North Sand to the N. Westward, if you do not intend to stand far in upon it, but tack when 9 or 10 fathoms is found on the outer spits, it is advisable when bound to the southward with a

contrary wind, to keep near the western edge of the sand in working, making short tacks to the westward, and standing on its edge occasionally to 10 or 11 fathoms in a large ship, or to 8 or 9 fathoms in a small one. By this means, moderate depths will be found for anchoring during the ebb, with tides more regular, and more favorable, than farther out in deep water toward the Arroas; for here, during S. E. winds, a current is often experienced to set N. W. and westward, when tides are prevailing along the edge of the sand. It is high water about the Arroas, and near the western edge of the North sand, at 6 hours on full and change of the moon; the strength of the ebb tide sets generally between N. W. and N. W. by N., $2\frac{1}{2}$ miles per hour, and it falls about 10 or 14 feet perpendicular; the flood sets in the opposite direction about S. E. $\frac{1}{2}$ S., slanting a little on the western edge of the North sand, or running nearly parallel to it, but is not so strong as the ebb.

Although the north-west and western edges of the North sand are not dangerous, it would be very imprudent to stand over toward the middle* of it, on account of the Blenheim's Shoal, and probably other dangers not yet explored; and the southern extremity of the sand, called generally the North Sand Head, ought always to be approached with great caution, for it is terminated by a bank, having on it only 2 or $2\frac{1}{2}$ fathoms.

Two and Half Fathoms Bank.

TWO AND HALF FATHOMS BANK, may be considered the most dangerous part of the North sand, because it fronts the North side of the channel between the Arroas and Parcelar Hill. His Majesty's sloop, Victor, examined it with her boats in January, 1805, and found it to extend from N. N. W. to S. S. E. about $1\frac{1}{2}$ mile, and about 1 mile from E. N. E. to W. S. W. When on it, Parcelar Hill bore E. $4\frac{1}{2}$° S., a hill called False Parcelar N. 45° E., and the low land was just visible with the eye elevated 16 feet above the sea. From $2\frac{1}{2}$ to 3 fathoms, were the depths found on it at low water, and it appeared very hard, the lead frequently slipping into holes, as from a rock, but brought up only fine sand; around the bank, the depths increase from 4 and 5, to 10 and 11 fathoms, mostly hard bottom; and eddies may be seen if the tide is strong, when crossing the spit that projects from its southern extremity into the channel. If a ship in borrowing toward the bank with a northerly wind, get soundings on this spit or tail of the Two and Half Fathoms Bank, she ought not to go under 10 or 11 fathoms, but must edge out to the southward. Several ships have grounded upon the bank at different times, by running in the night, or by borrowing too close in the day, and were in great danger of being wrecked. It is situated in lat. 2° 54′ N., distant about 5 leagues from the low land at the South entrance of the strait of Callam.

Blenheim's Shoal, and southern part of the North Sand.

BLENHEIM'S SHOAL, bearing about N. by W., 3 leagues from the $2\frac{1}{2}$-Fathoms Bank, and well in upon the North sand, was not known until H. M. S. Blenheim, of 74 guns, Admiral Troubridge, by standing far over on the sand, grounded, and was nearly lost; although this happened during neap tides, they were obliged to lighten her by cutting away the masts, and taking out the guns, &c. before she could be hove off the shoal. Captain Bissell of that ship, gave the following account of the shoal, dated H. M. S. Blenheim aground, 6th of April 1806; "Peak of Salangore Hills N. 56° E., another hill *(probably False Parcelar)* N. 66° E., Parcelar Hill E. 23° S., distant $8\frac{1}{2}$ or 9 leagues, lat. obsd. 3° 3′ N. It extends E. N. E. and W. S. W. about $1\frac{3}{4}$ mile, having only 6 and 7 feet in many places at low water *neap* tides, consequently less on the springs."

There seems to be a safe passage between the Blenheim's Shoal and the $2\frac{1}{2}$-Fathoms Bank, for the Victor had from 7 to 12 and 14 fathoms mostly hard sand, steering from the latter N. W. and northward, and passed close on the S. W. side of the Blenheim's Shoal without

* The Albion in September 1800, with Parcelar Hill E. S. E. stood on the sand, steered eastward, and had no less than $7\frac{1}{2}$ fathoms crossing over to the low land of Callam, where she tacked in $5\frac{1}{2}$ fathoms; but although this ship passed over in safety, it is not advisable to cross over the North Sand, as there may be shoal spots not yet known; particularly one spot said to lie to the northward of the Blenheim's Shoal.

discerning it, although she shoaled there to $5\frac{1}{2}$ and 5 fathoms. From thence, she steered N. W. by N. and N. N. W. over the North sand, in regular soundings from $8\frac{1}{2}$ to 12 fathoms sandy bottom, the least water being $8\frac{1}{2}$ fathoms; and the depth increased to 16 and 18 fathoms, when she got upon the northern extremity of the sand. The Mornington passed to the northward of the $2\frac{1}{2}$-Fathoms Bank, then betwixt it and the Blenheim's Shoal, on the 12th of December, 1803, and carried soundings from 6 to 8 and 10 fathoms, with Parcelar Hill bearing about E. by S. $\frac{1}{2}$ S.

Although with Parcelar Hill bearing between E. by S. and E. by S. $\frac{1}{2}$ S., there *may be* a safe passage over the North sand, betwixt the $2\frac{1}{2}$-Fathoms Bank and the Blenheim's Shoal, yet to venture through it, would be very imprudent in a large ship, or to stand far over to the eastward upon the North sand, until it is surveyed, or better known. There is a channel over it near the land, bounded on each side by dry sands or breakers, which was formerly frequented, but it seems intricate except for small vessels. A brig proceeded through it recently, on her passage from Prince of Wales' Island to Malacca, and worked through between the breakers, in soundings mostly 5 and 6 fathoms, where the channel appeared to be from $\frac{1}{2}$ to 1 mile broad.

Soundings in the channel betwixt the North Sand and Arroas,

THE SOUNDINGS between the western part of the North sand and the Long Arroa, are irregular from 35 to 46 fathoms about mid-channel, decreasing fast near the edge of the sand to 20 or 18 fathoms; the deep water extends within 4 or 5 miles of the high rock to the northward of the Long Arroa, then shoals suddenly to 20 and 18 fathoms, about 2 miles to the N. Eastward of that rock; but in some places, the soundings are very irregular, particularly to N. E. and northward of the rocks which lie near the Round Arroa.

answer as a guide in the night.

Working between the Long Arroa and the North sand in the night, 16 or 18 fathoms are good depths to tack in, from the edge of the sand; mid-channel track, and your proximity to the rocks off the Arroas, will be known by deep soundings of 35 to 46 fathoms; but farther eastward, betwixt the Round Arroa and the S. W. part of the North sand, the depths decrease, and are here generally irregular, 14 to 25 fathoms from side to side, except upon the bank adjacent to the Arroa. The soundings are more regular contiguous to the edge of the North sand, than in the South side of the channel.

And the Round Arroa is a good mark in the day.

If in rounding the edge of the North sand, the Round Arroa is never *entirely* sunk from the quarter deck of a large ship, or with the eye elevated above the sea 16 or 17 feet, she will not be too close to the sand; but when the Arroa is sunk from the poop, she will get upon some of the outer spits, into 7 or 8 fathoms hard sand.

Situation of the small banks in South side of the East and West channel.

THE BANKS *in*, and *contiguous* to the South side of the East and West channel, between the Arroas and Parcelar Hill, are the following. A small bank about 7 miles N. E. from the Round Arroa, and 3 or 4 miles distant from the flat black rock; the least water found on it, has been $5\frac{1}{2}$, 6, 7, and 8 fathoms. To the N. W., about 3 miles from this bank, there is deep water of 40 and 42 fathoms; and the soundings between it and the edge of the North sand, are mostly regular from 15 to 20 fathoms.

There is a small bank bearing from the Round Arroa East southerly, distant about $4\frac{1}{2}$ leagues, on which, the least water found by us in the Gunjavar, was $4\frac{1}{2}$ fathoms hard sand.

Another small round bank, lies 16 or 17 miles East from the Round Arroa, and about W. $\frac{1}{2}$ S. from Parcelar Hill, which is alarming to strangers, who suddenly get upon it, although not dangerous. Sounding all over it, we had not less than 5 and $5\frac{1}{2}$ fathoms hard sand, at low water spring tides; and from the ship at anchor, on the middle of it, the boats deepened fast in every direction, about the distance of a cable's length, to 12 and 14 fathoms.

From this small bank about 3 or 4 miles E. by S. to E. S. E., there are other shoal patches of hard sand, with soundings of 6, 7, and 8 fathoms on them. From these shoal patches on the South side of the channel, between the Arroas and the land of Parcelar, the Round

Arroa bears from West southerly to W. 3° N., and Parcelar Hill E. 5° N. to E. 7° N.; and the westernmost of them, more *particularly*, are much nearer to the Arroa than to the low land of Parcelar. The least water on any of them, is probably 4½ or 5 fathoms, but they are alarming to strangers, and will be avoided, by not bringing the Round Arroa to the westward of W. ½ S., or West a large ¼ S., whilst it can be discerned from the poop of a lofty ship; or by keeping Parcelar Hill to the eastward of E. 5° N., in passing them.

SOUTH SAND, appears to be formed of small banks, similar to those last mentioned, which probably are the prominent patches of the N. W. end of the sand, generally called the *South Sand Head:* the breadth of the channel between it and the North Sand Head is 7 or 8 miles. In June, 1795, Captain Mackintosh, in the Sarah, got upon this extremity of the South sand; they saw the Round Arroa from the mizen shrouds before dark, bearing S. by W. ¼ W., and steered between S. E. by S. and E. by S., in soundings from 25 to 16 fathoms until 10 P. M., when they shoaled quick to 8½ fathoms and anchored. At day-light, found they were far to the southward, Parcelar Hill bearing E. 15° N.; weighed with the wind at S. S. E., steered N. W. and N. W. by W. in regular soundings, decreasing gradually from 9½ to 6¾ fathoms when the hill bore E. 11½° N.; deepened afterward to 14 fathoms, steered N. N. E. and N. E. by N., in 8½ to 20 fathoms, the hill E. 9° N.; then steered toward the hill bearing E. 7° N., and had no less than 20 fathoms. When this ship shoaled to 8½ fathoms, with Parcelar Hill bearing E. 15° N., she was probably not far from danger on the South Sand, as will appear by the following extract from the journal of the Henry Addington. South Sand.

August 31st, 1811, at noon, saw breakers on the South Sand, bearing from South to S. by E., distant about 6 miles, Parcelar Hill bearing E. 16° N., East point of Pulo Loomaut N. 56° E., Body of Pulo Callam N. 40° E., in 26 fathoms. The Essex, in company, had Parcelar Hill bearing E. by N. ½ N., distant 12 or 14 miles, the trees under the South end of the hill just visible, but none of the low land to the southward, when the breakers bore S. ½ E. 5 or 6 miles, and *Long Rollers* about the North point of the South Sand S. W., then in 25 fathoms. The Cumberland, also in company, had Parcelar Hill bearing E. 15° N., distant about 12 miles, when the body of the breakers bore S. 9° E., about 4 miles, which appeared to extend about ¾ of a mile in a N. W. and S. E. direction, and are probably not visible except when the tide is low, or with a considerable swell.

The most dangerous part of the South sand, is its eastern side, nearly opposite to Parcelar Point; which will be mentioned in describing the channel from Parcelar Hill to Cape Rachado.

TO SAIL through the EAST and WEST CHANNEL, between the sands; with a strong and steady S. W. wind, give the western edge of the North Sand a birth, by keeping about mid-channel betwixt it and the Arroas, until the Round Arroa is brought to bear about W. S. W., then steer more easterly, sinking it from the deck when it bears about W. ¾ S., or W. ½ S. Directions for the channel betwixt the sands, and Parcelar Hill.

With the wind light and variable, between North and S. E., steer from Pulo Jarra or the Sambilangs, for the western verge of the North Sand, and keep along the edge of it in 18 or 20 fathoms, borrowing to 12 or 14 fathoms occasionally, and edging off to 20, 24, or 26 fathoms, as circumstances require. When the Round Arroa is discernible bearing about S. S. W., the Long Arroa will be seen about S. W., and the former ought *then* to be kept in sight from the quarter deck of a large ship, or from the poop of a small one, in soundings from 16 to 20 fathoms; for there is no danger on the edge of the North sand, if the Round Arroa can be seen from the quarter deck. After the Arroa is brought to bear W. S. W., steer an easterly course, as the wind and tide require, to sink it from the deck bearing W. ¾ S., and 14 or 15 fathoms will be the least water. When the Round Arroa is no longer visible, bring Parcelar Hill to bear East, and draw it to E. 5° N. or E. 6° N., by the time the

low land of Pulo Callam is appearing from the deck, being then abreast of the 2½-Fathoms Bank. With Parcelar Hill E. 3¼° S., you will get upon this bank; the hill E. 2° S., will just clear it, and you may probably cross over the tail or spit in 7 or 8 fathoms with Parcelar Hill E. 1° S. or E. 2° S.; but the hill should not be brought to the southward of East when passing the 2½-Fathoms Bank, compasses are so liable to error. From this bank, a spit extends to the southward a considerable way into the channel, with a gradual increase of depth upon it, proportionate to the distance from the bank; with Parcelar Hill E. 2° N., you will carry 11 or 12 fathoms in crossing the spit, and with the hill E. ½ N. you will pass clear to the southward of it, in 17 to 20 fathoms.

This spit is sometimes called the ***Eastern Bank***, it being nearer the low land of Parcelar than any other bank in the East and West channel; for there are several spots of 10, 11, or 12 fathoms, farther to the westward, exclusive of the shoal patches already mentioned, situated on the South side of the channel betwixt the Round Arroa and South Sand Head. The depths in the fair track, are mostly from 15 to 20 fathoms, and in the western part of the channel, they are subject to the least irregularity in the vicinity of the North Sand; but in the eastern part of it, opposite to the 2½-Fathoms Bank, they are liable to the least irregularity well to the southward, in the neighbourhood of the South Sand; and generally here, the depths are from 20 to 23 fathoms.

When the tides run strong in the springs, eddies are perceived upon the spit that projects from the 2½-Fathoms Bank, indicating its proximity. Between the Sand Heads, the strength of the ebb sets nearly N. W., but the first and latter parts of it, run very irregular. The flood is more regular in its direction, and runs with less velocity, although sometimes, liable to vary: this renders the passing of the 2½-Fathoms Bank dangerous in the night, unless near it before dark, and the situation well determined; or unless the night is so clear that Parcelar Hill can be seen, and its bearing taken, which sometimes happens.

Parcelar Hill is obscured at times during the day by clouds, when the *low* land of Pulo Callam, or that to the westward of the strait, may be visible from the 2½-Fathoms Bank; if so, the body of this piece of *low* land kept E. N. E. ½ N., or the East end of the same E. N. E., are good bearings to pass clear of the 2½-Fathoms Bank; and in coming from the eastward, if it is sunk from the quarter deck of a large ship with these bearings, she will be clear to the westward of that danger.

In proceeding through the channel, when the Round Arroa is sunk from the deck, and Parcelar Hill bearing E. 8° N., a ship will be near shoal water on the extremity of the South Sand; with the hill E. 7° N., she will pass over some of the small patches of 5 or 6 fathoms sand, having 16 or 17 fathoms around them. And when the Round Arroa is just disappearing with Parcelar Hill bearing E. ¼ S., she will be near the edge of the North Sand. The hill bearing East when in the West part of the channel, to E. 6° N., when the low land is seen from the deck, are safe bearings to work with throughout the middle and eastern parts of the channel, if the compass is true. And 13 fathoms is a good depth to tack in, from either side, when passing between the Sand Heads.

When abreast of the 2½-Fathoms Bank, or crossing the spit that projects from it, the low land of Callam is plainly seen from the quarter deck of a large ship; and from the poop, the tops of the trees may be discerned stretching from Pulo Callam almost to Parcelar Hill. When the low land to the southward of the hill begins to appear, the channel becomes wide, as you are past the 2½-Fathoms Bank, and South Sand Head; the hill may then be brought from East to E. by N. ½ N., in working toward the land of Parcelar; and if Pulo Callam is kept plainly in sight from the deck, you will not be too close to the South Sand.

Geo. site of Parcelar Hill; PARCELAR HILL, in lat. 2° 52′ N., lon. 101° 29′ E., bearing E. 4° N. from the Round Arroa, distant 49 miles, and 46 miles West from Malacca by chronometers, is of oblong form, sloping at each end when viewed from the westward, with the summit a little

to the West of its centre; but of a regular pyramidal aspect of small elevation, when seen from the South or S. S. Eastward, if not too far distant; and its declivity is very gentle to each extremity. It is easily distinguished, being situated much nearer the sea, and having a darker shade than the other hills, which are farther inland. From the N. Western extremity of the North Sand, its summit is just discernible from the poop or mizen shrouds of a large ship, bearing E. by S. ½ S. or E. S. E., and the highest part is generally set in taking the bearings of the hill, when passing through the East and West channel. Directly fronting the hill, there is the mouth of a river.

After passing the 2½-Fathoms Bank, and having the trees to the S. E. of Parcelar Hill visible from the deck, the water will soon deepen to 22 and 24 fathoms soft ground, in steering eastward for the hill: when the land is approached within 6 miles, it will shoal again to 18 or 19 fathoms, then steer along the coast at the same distance, in proceeding toward Cape Rachado. With a working wind, stand not off above 3½ leagues from the land about Parcelar, nor approach the South Sand nearer than 27 fathoms, for the depths contiguous to it hereabout, are not so great as to the southward of Parcelar Point, where deep water indicates the proximity of danger on the eastern part of the sand. Directions.

## 5th. DIRECTIONS FOR SAILING FROM THE SAMBILANGS TO SALANGORE, AND THROUGH THE STRAIT OF CALLAM.

WHEN bound to SALANGORE, or to proceed through the Strait of Callam, steer to the eastward after rounding the Sambilangs, until the coast is approached, which from thence to Salangore, is low and level fronting the sea, and covered with trees. With a northerly or easterly wind, coast along in sight of the low land, keeping about 2, 3, or 4 leagues off, as circumstances require, observing not to rise the beach from the deck, nor borrow under 8 or 9 fathoms. To sail from the Sambilangs to Salangore,

TANJONG AWAT, or CAPE CARAN, called also Mud Point, about 3 leagues N. Westward of Salangore, is encompassed by a shoal bank, which ought not to be approached under 5½ or 6 fathoms. About 5 miles W. N. Westward from Tanjong Awat, and 3 or 4 miles off shore, there is a bank of sand and broken shells, of considerable extent, having only 3½ fathoms on its shoalest parts. On its edge, and between it and the shore, the depths are 5 and 6 fathoms, and as they decrease, the bottom becomes hard. After the Sambilangs disappear, Salangore Hill may be seen from the deck bearing S. E. by E. or S. E. by E. ½ E., when in 10 or 11 fathoms green ouze; a ship ought then to keep the white sandy beach sunk from the poop, in steering along the coast to the S. Eastward, which will carry her outside of the shoal, in soundings not less than 8 or 9 fathoms. When Tanjong Awat bears nearly East, or the low land is seen beyond it, the beach may be raised with safety; but a birth of 1½ or 2 miles ought to be given this point, for until past it, the water shoals suddenly from 6 or 7 fathoms in standing toward the shore. After passing Tanjong Awat, the lead is a sufficient guide in steering eastward for Salangore Road, as the water shoals gradually on the edge of the mud bank that lines the shore. coast and dangers.

SALANGORE HILL and FORT, in lat. 3° 20′ N., lon. 101° 18′ E., is on the South side of the entrance of the river; and as the water is shoal to the southward, the best anchorage is abreast of the river, in any depth at discretion from 4 to 6 or 7 fathoms, with Tanjong Awat bearing N. W., and the 2 Pulo Anzas S. by E. or S. by E. ½ E., about 3 leagues distant. The river is navigable at high water for vessels of considerable burthen, and there is no danger at the entrance, the bottom being soft mud. It is high water in the road about Geo. site of Salangore.

5 hours on full and change of the moon. This place was formerly frequented, for tin and other articles of trade, which are now carried to Prince of Wales' Island, in the coasting proas. The Rajah of Salangore, has seldom been considered hostile to Europeans, but vessels at anchor in the road ought to be always on their guard, and not to allow any proas to approach them during the night; for here, as well as in several other parts of Malacca Strait, piratical proas frequently lurk about in search of defenceless vessels, or to assault those who are not watchful.

A caution.

Callam Strait.

CALLAM, or COLONG STRAIT, is formed by Pulo Callam and its contiguous islands on the West side, and on the East side by the main land and Pulo Loomaut: the latter is a large island to the northward of Parcelar Hill, separated from the main by a narrow strait, called the False Strait, which has 3½ to 9 fathoms water in it. The South entrance of this strait, is the first opening to the westward of Parcelar Hill; and its northern entrance, called Callam River, or Black River, unites with Callam Strait opposite to Deep Water Point.

The North entrance of Callam Strait, bears about S. E. by S. from Salangore Road, distant 6 leagues, and Parcelar Hill bears from it about S. S. E. ½ E. The 2 islands, called Mudancoos or Pulo Anzas, lie upon the eastern verge of a shoal adjoining to the inner part of the North Sand; they are steep to, and, with the edge of the contiguous sand, form the West side of the channel in proceeding toward Callam Strait. Opposite to Pulo Anzas, and bearing about S. E. by S. from Salangore Road, the Bottle Islands are situated on the bank that bounds the East side of the channel, distant 3 or 4 miles from the shore. These islets or rocks, must not be approached nearer than 1½ or 2 miles, for the reef projects about a mile outside of them; and 1 mile or more S. W. ½ S. from the southernmost or outer Bottle Island, there is a Dangerous Rock, having close to it 5 fathoms water.* To give a birth to these, it is proper to steer about S. by E. for Pulo Anzas, at leaving Salangore Road with the flood tide, because it sets S. E. to S. E. by S.

From the extremity of Bottle Islands' Reef, called sometimes Sail Shoal, Pulo Anzas bear W. by S. about 3 miles: the channel betwixt them is very safe, having from 5½ or 6 fathoms mud on the East side, to 9 and 10 fathoms within a mile of Pulo Anzas, and from hence to the entrance of Callam Strait, the depths are mostly from 6 to 8 fathoms in the fair channel.

Directions.

Having steered from Salangore Road, according as the tide requires to pass nearer to Pulo Anzas than to the Bottle Islands, a course from thence about S. E. by S. will lead directly to the Strait of Callam. In working, tack in 8 fathoms toward the edge of the North Sand, when near Pulo Anzas; and approach no nearer to the Bottle Islands than 5½ or 6 fathoms, giving these a birth of 1½ or 2 miles, observing to keep in soft bottom. When a little to the southward of Pulo Anzas, the channel may be traversed occasionally to 5 fathoms on either side, regular soundings, the bottom soft mud; but in standing to the southward, do not bring Pulo Anzas to the northward of N. W., for the entrance of the strait bears S. E. from these islands, and there is a shoal in a direct line between them and the West point of the entrance: the edge of the North Sand, bounding that side of the channel, lies nearly in the same direction; by bringing Pulo Anzas nothing to the northward of N. W., leads clear of all danger on the West side of the channel.

A little to the northward of the entrance of the strait, there is a shoal, which is avoided by keeping the middle Bottle Island on with Salangore Hill, and taking care not to open the hill to the westward, which is also a mark for the fair channel. Another mark is, to keep Parcelar Hill about its own length on with the West point of the entrance; and either side may be approached in steering into it, they being both steep to, and clear of danger.

* The Calcutta brig, was lost on this rock in 1799. In a manuscript chart, presented to me by Mr. Kitson, in 1810, there is a rock laid down on which the Bornholm was lost, with Salangore Hill bearing N. 2° E., the northernmost Pulo Anza W. by N., and the southernmost Bottle Island about N. E. ½ N.: there is 7 fathoms marked betwixt this rock and the edge of the eastern bank; therefore to avoid it, borrow toward Pulo Anzas into 8 or 9 fathoms in passing them.

FIRST, or NORTH REACH, extending nearly S. by E. ½ E. about 5 miles, and 1½ mile in breadth, is clear of danger; having 6 and 5 fathoms water very close to the shore of either side, and from 8 to 10 fathoms in mid-channel. The bluff point on the S. W. side of this reach, is called Deep Water Point, because the water deepens off it to 18, 20, and 22 fathoms; it is steep to, and should be approached pretty close, to avoid the indraught of the river opposite. First Reach.

SECOND REACH, or BAR REACH, extends from Deep Water Point about S. W. by W., and after rounding that point, the deepest water is found toward the eastern shore: when the Second Reach is entered, an opening to seaward is perceived at the South part of it, which admits no passage, being entirely filled with sand banks, dry at low water. A little to the westward of Deep Water Point, there is a small creek; and on the eastern shore, another, called Bar Creek, bearing about South from the former. After rounding Deep Water Point, the depths decrease fast to 6 or 7 fathoms in steering over for Bar Creek, and about ⅓ channel distant from the eastern shore, is a proper track, to prevent being horsed by the flood too close upon that side. If unacquainted, anchor in 6 fathoms a little short of the bar, to sound and examine it before crossing, as the sands are liable to shift; and 2 boats may be placed on it, to point out the best track. To the south-east of Bar Creek, there is another creek, and the bar begins at the former, stretching from thence across the strait toward the opening to sea. Between the creeks, the water is very shoal within ½ a cable's length of the eastern shore; but about ⅓ channel over from it, the deepest water is generally found on the bar, which is not more than 2¾ or 3 fathoms at low water, and 4¼ or 4½ fathoms at high water spring tides. Second Reach. To sail through it and over the bar.

The best mark for crossing the bar, is to keep the bluff of Deep Water Point N. E. ½ E. or N. E. ¾ E., on with the middle of a small hill having a clump of trees upon it, and is the northernmost of *four* small hills: when the Bar Creek is fairly open, bearing E. by S. ½ S. or E. S. E., you will be on the top of the bar, which is about a cable's length across. If at anchor to the northward of the bar, the best time to weigh is about 2½ hours flood, which will give time sufficient to kedge or warp over it before high water, should circumstances render that necessary. The flood runs through the middle of the strait until it is nearly ½ ebb on the shore, and this is generally the case in most parts of Malacca Strait.

After passing the bar, the water will deepen gradually to 5 fathoms abreast of the second creek, and the least water will be 5½ or 6 fathoms, in steering from thence about a large cable's length off the eastern shore. The western shore must be avoided until the Third Reach is entered, for it is fronted by a shoal of hard ground, stretching from the large opening to seaward, a considerable way into the strait.

There is a creek on the eastern shore, bearing about E. ½ S. from the South point of the opening to seaward, having on its South side, about a cable's length from the entrance, and nearly the same distance inland, some wells of fresh water, which can only be procured by carrying it in buckets to the boats. The Point on the North side of the entrance of this creek, is called Ann Grab Point, from a grab of that name having been wrecked on the flat that projects a little way off it; this point, ought, therefore, to have a birth of 1½ or 1 large cable's length, in passing. A Portuguese ship was lost farther to the northward; and in 1806, the ship Strathspey got aground, was attacked by the Malay Pirates, taken by them, and carried to Salangore.*

* This strait was *formerly* much used by ships of moderate size, but it ought not *now* to be recommended, for it has of late years been constantly infested by piratical proas, which lurk in the creeks ready to surprise small vessels, or ships which have the misfortune to get aground. The preference ought certainly to be given to the channel between the Arroas and Parcelar Hill, for although the passage by it may sometimes be less speedy than that through the strait of Callam, this is of little consequence, when compared with its greater safety.

Third Reach. THIRD, or SOUTH REACH, extends S. W. by S. and S. W., about 2 leagues or more; having entered it a little way you may approach either side in working, to any distance thought proper, for both shores are steep to: the water will deepen from 8 or 9, to 12 and 14 fathoms, as the southern entrance of the strait draws near, and shoal again gradually to $5\frac{1}{2}$ or 6 fathoms; there will be no less water, if the point on the S. E. side is not borrowed upon too close, for it is fronted by a projecting flat. The best track, is to steer out in mid-channel between the points which form the entrance, or rather nearest the western shore; then S. S. W. to South, according to the tide, until the water deepen to 10 or 12 fathoms; and after edging away about S. S. E., and deepening to 15 or 16 fathoms, a S. E. course may be steered along the coast for Cape Rachado, keeping from 4 to 8 miles off the land.

To sail into the strait from the southward. TO ENTER CALLAM STRAIT, when coming from the southward; having brought Parcelar Hill to bear about East, the entrance of the False Strait will be discerned, to the N. Westward of which, about 3 miles distant, lies the mouth of Callam Strait. Caution is requisite in steering for the entrance of the strait, as the ebb tide is liable to carry you toward the sand banks which project a great way to the westward of the West point, and are nearly dry in some places at low water, 2 or 3 miles distant from that point; steer therefore, for the point on the East side of the entrance, until near it, then keep in mid-channel, in sailing into the mouth of the strait; and the best time to enter it is about high water. After the shoal fronting the East point is rounded, continue to keep nearer to the eastern shore than mid-channel, to prevent being horsed by the ebb into the opening to the northward, a little inside of the strait on the West side, which is barred up with sands. Having passed, and shut in this opening, the preceding directions for sailing to the southward may be attended to, in proceeding through the strait to the N. E. and Northward.

## 6th. INSTRUCTIONS FOR SAILING FROM PARCELAR HILL TO CAPE RACHADO, AND FROM THENCE TO MALACCA.

Channel between Parcelar Hill and Cape Rachado. THE DANGERS contiguous to the channel betwixt Parcelar Hill and Cape Rachado, render the navigation of this part of the strait a little difficult in the night, to persons unacquainted, for the soundings being in some places irregular, are not a sufficient guide; the dangers on each side, must therefore be described, prior to giving directions for sailing through the channel.

Coast and bank fronting that hill. From the point on the East side of the entrance of False Strait, the land takes an easterly direction to Parcelar Hill, then turns gradually round S. Easterly to Parcelar Point, which is 10 or 11 miles distant from the hill. A bight or concavity fronting Parcelar Hill, is therefore formed betwixt these points, occupied by a shoal steep bank stretching from point to point; this bank is composed of fine hard black sand like steel filings, and ought to be approached with great caution, being steep to. At a considerable distance outside of it, 17 and 18 fathoms are found in some places; and from 16 or 17 fathoms close to its outer edge, the water shoals suddenly to 3 and $2\frac{1}{2}$ fathoms.

Anna, in June, 1803, standing in toward Parcelar Hill with the wind at S. E., had several casts of 17 fathoms, the large lead kept going; next cast we had 5 fathoms, and although the helm was instantly put down, the ship grounded in stays, being then high water.

Tides. In the night, we had only 12 feet at low water, and 18 feet at high water; but on the following day, the tide rose to 21 feet before high water, when we hove her off the bank by the stream anchor, previously carried out with a whole cable. When aground, the centre of Par-

celar Hill bore N. 31° E., northern extreme of the land N. 51° W., and Parcelar Point or the southern extreme S. 49° E., off shore about 2½ miles.*

The tides were then at a medium between springs and neaps, and flowed only 6 feet perpendicularly in the night, but had flowed to 9 feet a considerable time before high water during the day; it therefore appears, that here, as on the coasts of Scindy, Guzarat, Concan, and other parts to the northward of the equator, the principal, or highest tides, are in the day, during the S. W. monsoon, when the sun is near the northern tropic; and the highest tides at these places happen in the night during the N. E. monsoon, when the sun is in the southern hemisphere. The perpendicular rise and fall of the tides on the sands, and betwixt Pulo Callam and Cape Rachado, is from 11 to 14 or 15 feet on high springs, and their velocity is then about 2 to 2½ miles per hour, between Parcelar Hill and the Cape. They set fair through the channel, the flood about S. E. by E. and the ebb N. W. by W., but close to the South Sand, the latter sets about N. W.; near Cape Rachado, the tides are strongest, and run with eddies during the springs.

PARCELAR POINT, in lat. 2° 42′ N., being of a round form, similar to the adjacent low coast, is not easily distinguished; but a little eastward from it, there is a white patch on the shore, which may be discerned when the point is bearing well to the northward, and the observer not too far distant from the land.† This point may be approached occasionally to 2 miles, for the bank that occupies the bight abreast of Parcelar Hill, converges near the the point, having 20 fathoms water a little way from its edge. Parcelar Point.

There are several dangerous shoal patches, stretching S. Eastward from Parcelar Point, the southernmost of which called Bambek Shoal, is about 4 leagues distant from the Point, nearly midway between it and Cape Rachado. Shoals in the bight betwixt it and Cape Rachado.

The northernmost of these patches, is not far from Parcelar Point, having 20 and 21 fathoms near its outer edge: some of the others have regular soundings on their edges, from 12 to 9 or 8 fathoms; but the soundings in general, are not a safe guide in standing near these banks. When within 3 or 3½ leagues of Cape Rachado, or a little nearer it than to Parcelar Point, you are clear to the southward of all the dangers in the extensive bight between them, which bound the East side of the channel.

On 1 of the northernmost patches in the bight, not far to the southward of Parcelar Point, the Sarah, aground in 2½ fathoms, had 10 fathoms in the opposite chains, Parcelar Hill bearing N. 30° W.

The Gunjavar, after rounding Cape Rachado with a westerly wind, lay up N. N. W. in soundings from 20 to 13 fathoms, and got between the southernmost, or Bambek Shoal, and the shore. She tacked in 15 fathoms, steered West 2 miles close hauled, in 9 to 15 fathoms soft, then 12 fathoms hard ground, next cast 4 fathoms, and grounded on the inner edge of the shoal, Cape Rachado bearing S. E. ½ E. 4½ or 5 leagues, Parcelar Point the northern extreme of the land N. W. by W. off shore 3 or 4 miles. The kedge anchor was laid out, she was then hove off, and anchored in 8 fathoms, night approaching; and next morning, weighed and stood to the S. E. and Southward, round the eastern extremity of the shoal.

* This part of the coast fronting Parcelar Hill, having in *former* charts been represented convex instead of concave, toward the sea, with good soundings close to the shore, many navigators have thereby been led into error, and ran their ships aground on the Shore Bank. The Mysore grounded on it in 1802, and was with some difficulty hove off, after throwing her lumber, some guns, &c. overboard.

With Parcelar Hill N. ½ W. the Gunjavar's helm was put down in 11 fathoms, and she grounded in stays. The Hampshire of Bombay; a Portuguese ship belonging to Macao, and several other ships, have grounded at various times upon this bank, which stretches along the shore fronting Parcelar Hill, and from thence, it recedes toward Parcelar Point.

† There is also a white patch, near the extreme of a point about 3 leagues N. N. Westward from Cape Rachado, with a small island to the westward of it, and others to the eastward.

The Portuguese ship Carmo, aground in 11 feet water on 1 of the patches in the bight, had Cape Rachado bearing S. E. $\frac{3}{4}$ E., and Parcelar Hill about N. W. $\frac{1}{4}$ N.

The ship La Paix, bound from China to Bengal, was wrecked on Bambek Shoal, on the 28th of November, 1805. At 5 P. M. she tacked in 19 fathoms, and after running 2 miles S. W. by W., struck and grounded on the shoal in $2\frac{1}{2}$ fathoms, Cape Rachado bearing S. E. by E., Parcelar Point N. W. by W., the Hill N. 41° W. off shore 4 miles. Found on sounding all round, that they were encompased by rocks and shoals, and having only 10 feet rocky bottom under the bow, she soon bilged with the swell, and was totally lost. Other ships, have formerly been wrecked on these shoals, which evinces the danger of borrowing toward them; they will be avoided, by not bringing Cape Rachado to the southward of S. 60° E., nor Parcelar Point to the westward of N. 43° W., in passing these shoals in the bight between them.

SOUTH SAND, from its N. Western extremity (already mentioned in the preceding Section) to abreast of Parcelar Point, is very little known, but considered dangerous and steep on the N. E. side. About S. W. from Parcelar Hill, and 5 leagues distant from the nearest part of the land, H. M. S. Albion in 1804, got into 6 fathoms upon 1 of the outer patches of the South Sand, which is probably the nearest to the land in that part. The Vansittart, on the 15th of August, 1815, steering S. E. $\frac{1}{2}$ E. at 3 A. M. grounded on the South Sand in a $\frac{1}{4}$ less 4 fathoms, and had 7 fathoms under the stern. Hove the sails aback and floated off, then anchored, but a squall coming from southward, cut the cable, steered West about 3 miles, and anchored at $4\frac{1}{4}$ A. M. in $10\frac{1}{2}$ fathoms, with Parcelar Hill at daylight, bearing N. $21\frac{1}{2}$° E., and the low land about Parcelar Point N. 51° E.

Dangers on the eastern part of the South Sand.

The eastern extremity of the South Sand, bearing between S. by E. $\frac{1}{2}$ E. and S. by W. $\frac{1}{4}$ W. from Parcelar Point, seems to be the part most dangerous, and best known; for several ships have grounded upon the patches of which it is formed, and were nearly lost; and as these patches lie opposite to the shoals to the S. Eastward of Parcelar Point, the channel between them is more contracted, and more dangerous *here*, than in any other part of the strait from Parcelar Hill to the Carimons.

The patches on this extremity of the South Sand, nearest to the land, are distant $10\frac{1}{2}$ or 11 miles from the land of Parcelar Point, and they consist of small pyramids of hard sand, with $1\frac{1}{2}$ and 2 fathoms water upon them. The Hornby tacked in 9 fathoms close to 1 of the patches with Parcelar Hill N. by W., and Cape Rachado E. $\frac{1}{2}$ S. appearing like an island; and the boat on examining it, found only $1\frac{1}{2}$ fathom water.

The Lord Macartney, aground on 1 of these patches in 9 feet at low water, had Parcelar Hill bearing N. by W. and Cape Rachado E. 5° S., which seems to have been on the patch last mentioned. Prior to grounding, she must have been some time on the South Sand, for she steered E. N. E. 4 miles in 18 to 13 fathoms, next cast 5 fathoms, and then grounded. She lay on the sand from the 21st to the 29th of August, 1792, and was nearly lost, having been obliged to discharge much of the cargo, into 2 ships sent to her assistance from Malacca.

The Besborough, aground, had Parcelar Hill N. $\frac{3}{4}$ W., and Cape Rachado E. $\frac{1}{2}$ S. 6 or $6\frac{1}{2}$ leagues; the Lascelles in company, at the same time, at anchor in 8 fathoms, bore from the Besborough S. by W. about $\frac{1}{2}$ a mile. When the Besborough floated, they steered between E. S. E. and S. S. E., in irregular soundings from 8 to 17 fathoms, hard ground. The Indus of Bombay, and other ships also grounded, and were nearly lost upon these dangerous pyramids, which form the eastern extremity of the South Sand.

About 5 miles farther S. Eastward, His Majesty's ship Trident had 5 fathoms on another patch of the eastern part of the South Sand, with Parcelar Hill N. by W. $\frac{1}{4}$ W., and Cape Rachado E. by N.; she hauled to the eastward, and deepened gradually.

Geo. site of Cape Ra.

TANJONG TUAN, or CAPE RACHADO, in lat. 2°28′ N., lon. 101°52′ E., or 23

miles West from Malacca by chronometer, bears from Parcelar Point S. E. by E. 24 or 25 miles. It is a steep bluff headland covered with trees, and may be discerned at the distance of 7 leagues; it is just visible from the poop of a large ship, when she is a little to the southward of Parcelar Point. When first seen in coming from westward, it appears like an island; the adjacent coast, and neck of land that joins it to the Cape, being much lower than the latter, are not so soon perceived; and the whole of the coast that forms the deep bight between Parcelar Point and Cape Rachado, has a similar aspect, rather low and woody, with some small rivers. There is an islet or rock close to the pitch of the Cape, and a bay on each side, that to the N. W. being the largest, in which are some islands near the shore, bold to approach, but you should not stand far into the bay, it having never been sufficiently explored. Close to the Cape, the depths are 24 and 28 fathoms: and about 3 or 4 miles off it, from 15 to 22 fathoms, irregular at times: from this situation, the low woody coast of Sumatra may be seen from the deck, the strait being here, more contracted than in any other part to the northward of Malacca.

chado; adjoining coast.

HAVING proceeded through the EAST and WEST CHANNEL, or through Callam Strait, do not in working, stand above 3½ or 4 leagues off the land; nor above 3 leagues off it, when Parcelar Hill bears between North and N. N. W. You may borrow occasionally, within 1½ or 2 miles of the land to the westward of Parcelar Hill, or tack in 13 fathoms when the hill bears between E. by S. and E. by N.; but the shoal that stretches along the the concavity of the land abreast of Parcelar Hill, projects about 2½ miles to seaward, and being steep to, on the outer edge, should not be approached under 17 fathoms. Close to its outer edge, the depths are 16 and 17 fathoms, and nearly the same depths, 17, 18, and 19 fathoms, are found at a considerable distance outside of it, in some places. About 3 or 4 miles outside of the edge of the Shore Bank, there is a *long narrow* bank in the fair channel, with 13, 14, and 15 fathoms water on it, which might in the night, be mistaken for the edge of the former. The North end of this narrow bank, bears about W. by S. from Parcelar Hill, and it extends parallel to the coast nearly till abreast of Parcelar Point; with the hill bearing from E. by N. to N. N. E., the depths on it are 13 to 16 fathoms; and on its southern part, 18 to 21 fathoms. The soundings inside of this bank, are mostly 19 and 20 fathoms near it, shoaling to 17 fathoms close to the edge of the Shore Bank, but not always regular; for around Parcelar Point, there is 20 or 21 fathoms very near the Shore Bank, the same depth on the southern extremity of the Channel Bank, 20 to 24 fathoms between them, and 26 to 30 fathoms off the South end of the Channel Bank, about 3 or 4 miles to the S. S. W. of Parcelar Point.

Directions to sail from Parcelar Hill to Cape Rachado.

To avoid all the dangers fronting the shore, betwixt Parcelar Hill and Cape Rachado, do not come within a *direct line* joining the 2 extremes of the land, in passing the bight off Parcelar Hill; nor bring Parcelar Point, (the southern extreme of the land,) to the southward of S. 60° E., to keep clear of the edge of the Shoal Bank embracing the bight to the N. Westward of that point. Do not approach Parcelar Point nearer than 2 miles, or rather give it a birth of 3 or 4 miles in passing. When Cape Rachado is seen, keep it to the eastward of S. 60° E., nor bring the North extreme, (Parcelar Point,) to the westward of N. 43° W. in passing the extensive bight between them; for these bearings will not lead you far outside of the shoals which stretch along its northern and middle parts.

Cape Rachado E. S. E., is a fair mid-channel bearing throughout; when working, it may be brought to E. S. E. ½ S., or S. 60° E., in standing toward the shoals in the bight; and to E. by S. ½ S., in standing toward the Pyramids on the eastern part of the South Sand; but as the channel betwixt them is not more than 8 miles wide, it would be dangerous in traversing, to exceed these bearings of the Cape, when it appears like an island. When it is approached within 3½ or 4 leagues, and the low neck of land that joins it to the coast be

considerably elevated from the deck, the channel becomes wider; and may then *occasionally*, be traversed with the Cape bearing from S. E. by E. to E. ½ S.

FROM abreast of PARCELAR POINT in the night, at 4 or 5 miles distance, steer S. E. by E. for Cape Rachado, which is the course from point to point: the soundings in the fair track, will be generally 25 to 27 fathoms; from 35 to 40 or 44 fathoms, will be near the Pyramids of the South Sand; and with 17 or 18 fathoms when abreast of the shoals in the bight, is much nearer them than to the South Sand. This may be useful as a general remark, but the soundings are often irregular in the channel; for a little to the southward of Parcelar Point, there is 30 fathoms within 2 miles of the Shore Bank, 20 fathoms close to it, and from 10 to 14 fathoms, contiguous to the other patches and Bambek Shoal, more distant from Parcelar Point. There are also some small banks in the channel, having from 11 to 15 fathoms water on them, although these are few, and generally in the shore side of the channel. Particular care must be taken not to deepen above 36 or 38 fathoms toward the Pyramids that form the eastern edge of the South Sand, for the depths increase near them on the N. E. side to 40 or 44 fathoms, then decrease suddenly to 30, 20, 10, and 2 or 1½ fathoms upon them. If the lead is kept going, the deep soundings in the outer part of the channel, is a certain indication of the proximity of this part of the South Sand, when passing it in the night. To the N. Westward, opposite to Parcelar Hill, the depths near the edge of it are not so great; and when Cape Rachado is brought to bear N. E. there is *thought* to be no danger on the South Sand; for after passing the Cape a little way, the strait is *said* to be safe from side to side, excepting a bank about 6 leagues to the S. Westward of the Water Islands, on which the Milford grounded. It is, however, advisable not to exceed the distance of 4 leagues from the Malay coast, in sailing from Cape Rachado to Malacca, and the Cape may be passed at the distance of 1 to 6 or 7 miles, as circumstances require. About 2 leagues to the S. Eastward of the Cape, there is a small bank in the channel with 10 and 12 fathoms on it; and the depths in the offing, are irregular from 16 to 25 fathoms betwixt Cape Rachado and Tanjong Clin; but farther eastward, they become more regular.

Tanjong Clin and the adjoining coast.

TANJONG CLIN, or Peer Punjah, about 5 miles to the N. W. of Fisher's Island, and 6½ or 7 leagues S. E. by E. from Cape Rachado, is known by 2 or 3 trees on its extremity, more elevated than the others near the sea. The coast betwixt it and Cape Rachado forms a bight, and being rocky in several parts, with 17 and 18 fathoms not far from the shore, should not be approached nearer than 2½ or 3 miles, for the soundings are not always regular. About 6 or 7 miles to the eastward of the cape, the entrance of Lenque River is situated, which is a considerable river, navigable by small vessels.

The coast about 2 leagues to the N. W. of Tanjong Clin, is lined by straggling rocks under water, projecting 1½ or 2 miles from the shore, with 10 and 11 fathoms between some of them; near these, there is a large rock always above water, distant 1½ or 2 miles from the shore, having near it 17, 18, and 19 fathoms irregular soundings.

The Snow Forth stood in, let go her anchor in 12 fathoms during the night, when near high water; and after tending to the ebb, got fast aground, upon 1 of these rocks, which shews the impropriety of borrowing too close to the shore hereabout in the night.

Fisher's Island and its contiguous shoal.

FISHER'S ISLAND, bounding the N. W. side of Malacca Road, is low and level; being encompassed, and joined to the main by foul ground, it ought not to be approached under 15 fathoms toward the South end, these depths being near the edge of the shoal. With the extremes of the island bearing from N. 11° W. to N. 22½° W., body of it N. 15° W. distant ½ a mile, Malacca Flagstaff on the Hill E. 14° N., Outer Water Island S. 45° E., and Tanjong Clin the northern extreme N. 59° W., there is a CIRCULAR SHOAL, about 10 or 12 fathoms in extent, having 18 feet on it at low water spring tides, the bot-

tom sand and stones intermixed with mud.* To avoid this shoal, and other rocks near the S. E. side of Fisher's Island, do not stand nearer to the island than 1 mile, but tack from it in 15 fathoms, with the lead kept briskly going, when working into Malacca Road during the night. The coast about Tanjong Clin, and from thence to Malacca Road, may be approached to 14 or 15 fathoms, but it would be imprudent to go under these depths in a large ship, particularly in the night.

To sail from Cape Rachado to Malacca, or to the Water Islands.

In sailing from Cape Rachado toward Malacca, or the Water Islands, (the latter bearing from it about S. E. ½ E. distant 12 leagues) keep from 3 to 6 or 7 miles off shore, in soundings from 16 to 20 fathoms, which are not always regular; when well out in the offing, the depths in some parts increase to 24 or 26 fathoms, particularly opposite to Tanjong Clin, and Malacca. If you do not stop here, steer a course as the wind may require, to pass outside of the Water Islands, at any distance thought proper, but if bound into Malacca Road, with the wind from the land, Fisher's Island may be rounded within 1½ mile.

To sail into the road in the night.

If working into the road in the night, or approaching it from southward, when round the Water Islands, do not haul in too close to the rocky flat called PANJANG REEF, which projects about 2 miles from the shore, and extends along it to Red Island, near Malacca.

Panjang Reef.

The church and Flagstaff on the hill, bears from the West end of Panjang Reef N. ½ E., distant 1½ mile, and from its East end N. 25° W., distant 3½ miles: within 2 cable's lengths of its southern edge, there are 18 and 19 fathoms water, and 15 fathoms close to the rocks; the lead is therefore no guide, if you go under 18 or 19 fathoms toward the S. Eastern edge of the reef. The Cartier, and Asia, returning from China in different seasons, got upon this reef by hauling up too soon for the road, during the night, where they lay a tide in a very dangerous situation; the Cartier had 4½ fathoms under her stern at low-water, and the rocks appearing above water close to her stem. Several other ships have grounded on this reef in the night, whilst the Shah Byramgore, barely escaped by anchoring close to the rocks †

Anchorage in Malacca Road.

From 20 fathoms in the offing, the depths decrease regularly over a bottom of soft mud toward the road, where the best anchorage is under 10 fathoms, with the church on the hill N. E by E. Fisher's Island N. W. ½ W., and the Tuft of trees East, off the town about 1½ or 2 miles. When the depth is more than 10 fathoms, the bottom is generally stiff clay, requiring good cables to purchase the anchors, after they are seated in the ground; but under 10 fathoms the bottom is soft mud, and continues so, close to the shore. Large ships may anchor in from 7 to 9 fathoms; and small ones, in 6, 5, or 4 fathoms at discretion, there being no danger, if they should happen to ground on the soft mud bank that fronts the town. Do not anchor on the East side of the road, near Red Island, for the bottom is foul and rocky, the depth decreasing suddenly from 8 to 3 fathoms on the northern extremity of Panjang Reef. During the S. W. monsoon, sudden hard squalls frequently blow into the road from the Sumatra side in the night, accompanied with much thunder, lightning and rain; several ships have been damaged here, by lightning, at various times.

The tides of flood and ebb, continue to run through the road 2 hours after high and low

* The Sarah borrowing too close, shoaled from 10 to 5 fathoms at a cast; other ships, approaching still nearer to Fisher's Island, have grounded on the shoal; and in 1789, I saw a snow bound from Manilla to Madras, run aground upon the spit which projects from Fisher's Island, by borrowing too close after weighing from Malacca Road. There is a narrow channel between this spit and the Circular Shoal, through which the Terpsichore frigate passed in 1803.

The Charles Grant on the 19th of September, 1811, when steering into the road, had a cast of 5¼ fathoms by borrowing toward the S. E. side of Fisher's Island, and when the anchor was dropped, she was brought up in 8 fathoms with the flagstaff bearing N. 55° E., Fisher's Island N. 55° W.: the boat was then sent to sound on the shoal spot, which was found with difficulty, being very small, and had ¼ less 5 fathoms on it at low water; it bore from the ship at anchor N. 64° W., distant about ¼ a mile, but the motion of the boat, prevented bearings from being taken on the shoal.

† H. M. S. Trident, bearing Admiral Rainier's flag, going into the road in a dark night, with a strong breeze, saw the breakers on the reef, and brought up with 2 anchors within a cable's length of the reef in 18 fathoms. It is said, that a lighthouse has been lately erected at Malacca, to guide ships into the road clear of Panjang Reef.

water on the ground; and boats cannot get into the river after half ebb. The rise of tide is from 8 to 10 feet on the springs, and it runs about 2 miles per hour. The sea worm, is very destructive in this road, to vessels or boats which have not copper sheathing.

Geo. site of the Fort.

MALACCA FORT, or the Church on the Hill, is in lat. 2° 12′ N., lon. 102° 15′ E., by mean of a series of lunar observations taken by different navigators, corroborated by chronometers from Prince of Wales' Island. This hill, on which the church is built, and where the colours are displayed, stands in the centre of the fort, fronting the sea on the South side of the river; and the town lines the sea shore on the North side the river, there being a draw bridge of communication.

Country around.

The country a few leagues inland from Malacca, is formed of undulating hills moderately elevated, generally called Malacca Hills, and 7½ leagues E. by N. ½ N. from it, there is a high mountain called Goonong Ledang, also Queen's Mount, or Mount Ophir; but the coast, and the land adjacent to the town, is low, and all the country is mostly covered with wood*.

Since Malacca has been in possession of the English (and some time previously) its trade greatly decreased, having been drawn to Prince of Wales' Island; but it will always be the most convenient port in the strait, for ships to touch at, when only water and refreshments are wanted. Water is immediately sent off, on application to the master attendant; and fish, yams, sago, and a variety of excellent fruits, may be procured at moderate prices.

Convenient for obtaining refreshments.

Buffalos, a few hogs, and some poultry, may also be obtained, and grain imported from Java, Sumatra, or Bengal. Dammer for caulking, is an article of trade here, and poon spars for masts, brought over from Siak River, on the opposite coast of Sumatra.

Boats may proceed into the river, about a large ¼ flood; they should steer for the Church on the Hill, keeping it rather on the starboard bow, and when the bar is approached, the channel may be discovered, by the stakes at the entrance of the river.

## 7th. DIRECTIONS FOR SAILING FROM MALACCA TO SINCAPOUR STRAIT: COASTS, ISLANDS, BANKS, AND DANGERS.

Water Islands.

WATER ISLANDS, or FOUR BROTHERS, situated from 6 to 10 miles S. Eastward of Malacca Road, are high small round islands, covered with trees, and take their name from the fifth, or largest one, nearest the coast, which has excellent fresh water on its eastern side. As the flood tide sets along the coast from Malacca Road toward these islands, ships leaving the road should steer well out to seaward, in order to round the outer island at any convenient distance, close to which, there is 17 or 18 fathoms, and 20 fathoms about a mile off.

To sail outside of them.

The common passage for ships, is outside of these islands, but Captain J. Lindsay's examination of this place, proves that small ships may occasionally pass with safety between some of them, if any advantage is to be had thereby. Inside of the outer island, and also betwixt the westernmost and the others, the passage is safe, and the depths 18 and 19 fathoms soft mud.

Channels between them.

The widest channel is between the large island and the Four Brothers, were it not for a rock or reef under water, nearly in mid-channel. When upon it in 8 feet at low water, the West end of the large Water Island bore N. 28° W., and Malacca Church open to the west-

* Being situated near the equator, on the side of a strait, liable to calms, with offensive mud banks close to the houses, which dry every tide, and the low country around being almost an impenetrable forest; it might naturally be expected, that Malacca would thereby, be rendered an unhealthy place, and by the noxious vapours and exhalations arising from the woods. It is, however, the most healthy place known in India, so near to the equator; of which, the venerable inhabitants, daily seen in the streets, are sufficient proofs.

ward of it 1° 29½′ by sextant, the N. E. end of the Large Island N. ½ W., the westernmost Brother, W. S. W., and the small island or point to the eastward of the southernmost Brother, just appearing over the rocky point of the East end of the Middle Brother, bearing then S. ½ E. There is a good passage on either side of this rock, in 18 and 19 fathoms water; and it may be avoided, by keeping either the Middle Brother, or the Large Island a-board; for the rock is about 1 mile from the South East end of the latter, and nearly the same distance from the Middle Brother. After passing through this channel, the depth will decrease to 10 or 12 fathoms on the mud bank fronting the coast to the eastward of the islands, on which there is no danger.

Vessels coming from the eastward, to pass through this channel, may keep the South end of the Large Water Island N. W., or more westerly, until they shut in the southernmost Brother with the 2 others; or they may steer for the N. Easternmost Brother, and pass it at ½ a mile distant, not bringing the westernmost Brother to the southward of W. S. W. ½ S. until past the Middle Brother, which may be approached within 100 yards without danger.

To sail from the outer Water Island to S. Eastward.

OUTER WATER ISLAND, bears S. E. from Malacca Road, distant 9 or 10 miles; in passing it with a working wind, do not stand above 4 leagues to the S. Westward, for the Three Fathoms Bank on which the Milford grounded, is thought to lie about 6 leagues S. W. from these islands; and a few miles farther to the north-westward, we shoaled suddenly in the Anna, from 28 to 8 fathoms, and tacked. After rounding the Water Islands, the coast may be approached to 12 or 13 fathoms in working, until past Mount Mora; the Sumatra coast may also be approached occasionally to 14 fathoms, in this part of the strait; but it is best to keep nearest the Malay side, to prevent getting outside of the Long Bank in the middle of the strait, to the South of Mount Formosa.

Mount Mora and the contiguous coast.

MOUNT MORA, or MOAR, in lat. 1° 59′ N., bearing E. by S. about 8 leagues from the Outer Water Island, is an insolated hill near the sea, covered with wood, just visible from Malacca Road. Tanjong Tor, the contiguous point of land, bears about E. S. E. from the Outer Water Island, and with the whole of the coast in this space, is low level land, having several small rivers falling into the sea. The coast from thence to Formosa river, continues low and woody, and the whole of the opposite land of Sumatra, is low, and covered with trees.

Geo. site of Mount Formosa. Coast around.

MOUNT FORMOSA, in lat. 1° 49′ N., lon. 102° 56′ E., or 41 miles East from Malacca by chronometers, is the highest summit of a group of undulating mountains near the sea, and is just discernible from the Water Islands. The western end of this mount, forms the bluff point of land called Point Sizan, on the East side of the entrance of Formosa river, which extends a considerable way into the country. Abreast of this river, there is an extensive shoal called FORMOSA BANK, on which the Murad-bux shoaled to 2½ fathoms, in 1800. The Asia steering along shore to the S. Eastward in 12 and 14 fathoms with the land wind, shoaled suddenly, and grounded on this bank in June 1803, where she lay a tide. When aground in 2½ fathoms at low water, Formosa Peak bore N. E. by E. ½ E., entrance of Formosa river N. E. ¼ E., Mount Mora, N. W. by N., western extreme of the land N. W. by W. off Formosa river 5 or 6 miles, which appears to be the shoalest part of the bank, and consists of black sand. This dangerous part of the bank, seems to be connected to Point Sizan by a spit of shoal water, from which it is distant about 4 miles, and nearly equal distance from the point on the other side of Formosa River. From the shoalest part of the bank, a spit extends a great way to N. Westward, with 5, 6, and 7 fathoms water on it, which probably reaches to the shore a little eastward of Tanjong Tor, or about S. S. E. from Mount Mora. Betwixt the bank and the shore, there are regular soundings, 10 and 12 fathoms soft ground; when the Asia floated, she was drifted inside of the bank by a squall, and steered 3 miles to the N. W. along its inner edge, in 8 and 9 fathoms, then crossed it in

Formosa bank.

5 fathoms with the western extreme bearing N. W. ½ W., Mount Mora N. W. by N., Mount Formosa E. by N. ½ N., and a little hill near the shore with a peaked summit N. N. E. ½ E. On the outer edges of the bank, the depths decrease suddenly, but the lead if kept *briskly* going, will indicate its proximity, and give warning to tack.

About 5 miles W. N. W. from Formosa Bank, there is a *small bank* of 10 to 8 fathoms, having 18 and 17 fathoms between it and the shore. The Antelope, had 2 casts of 8 fathoms sand on this bank, with Mount Formosa bearing E. ¼ N., Mount Mora N. by W., bluff end of Formosa Hills forming Point Sizan E. by N., off shore about 8 miles, and in crossing toward the shore had 18 fathoms. From Mount Mora about S. W., and 3½ or 4 leagues off the Sumatra shore, we shoaled in the Anna from 25 to 11 fathoms upon a bank, and deepened regularly when over it to 23 fathoms, then shoaled again to 11 fathoms, where we tacked about 4 miles from the coast of Sumatra. These small banks in the fair channel, here, and in other parts of the strait, with from 9 to 14 fathoms on them, may sometimes cause anxiety to persons unacquainted, when not certain of their situation in the night.

Other banks not dangerous.

Geo. site of Pulo Pisang;

PULO PISANG, in lat. 1° 28′ N., lon. 103° 16′ E., or 61 miles East from Malacca, by chronometer, is of middling height, covered with wood, and composed of 3 hummocks; the central part being of a round form, and rather more elevated than the other hummocks, may be seen 8 or 9 leagues. It lies about 4 or 5 miles from the coast, and is connected to it by an extensive mud-bank, over which there is said to be a channel with 3 or 4 fathoms water, fit for small vessels. Close to the East side of Pulo Pisang, there is 2 round islets, and 2 others of similar aspect, contiguous to its western side. On the largest of these, fresh water may be sometimes procured. The coast fronting the sea betwixt Mount Formosa and Pulo Pisang, is low and woody, excepting Battoo Baloo, a small round mount near the sea, rather more than half way from Formosa toward Pisang.

the coast,

and its contiguous mud bank.

The coast from Mount Formosa to Pulo Pisang, and from thence to Pulo Cocob, is lined by a shoal mud bank, projecting 3 and 4 miles off shore; and 2 leagues to the N. W. of Pisang, it stretches out near 5 miles, leaving a space of good soundings nearer the island, which is steep to, on the N. W. and West sides. On the edge of this shore bank, the depths decrease suddenly from 10 or 9, to 6, 5, and 4 fathoms, to the N. W. of Pisang; and from 12 or 11, to 4, 3, and 2 fathoms to the S. Eastward of that island, being here, more steep and dangerous.

It may be observed as a general rule, that on the edges of the shore banks throughout the strait, the depths decrease suddenly; and also on the edges of those in the offing.

Pisang Banks.

Fair Channel Bank.

PISANG BANKS, exclusive of that lining the coast last mentioned, are *three* in number betwixt it and the coast of Sumatra. The first, called the FAIR CHANNEL BANK, extends parallel to the coast, in the direction of the channel; and lies a little nearer to the Shore Bank than to the Long Middle Bank. Mount Formosa bears about North from its northern extremity, and Pulo Pisang about North from its southern extreme; the depths on it are generally from 8 to 11 fathoms, and the least water known, is 6½ to 7 fathoms in two places near its South end, with Pulo Pisang bearing E. by N. and N. E. by N., from 4 to 5 miles. There appear to be some *small gaps* in this bank, as I have crossed over it with the lead going, and had not shoal soundings; but these gaps are very narrow, for ships making long tacks across the channel generally get soundings from 8 to 11 or 12 fathoms in crossing over the bank, which is a good guide in the night. The depths betwixt this bank and the Shore Bank, are 13 to 20 fathoms; and between it and the Long Middle Bank, generally from 16 to 24 fathoms, but not always regular.

Long Middle Bank.

LONG MIDDLE BANK, distant 6 or 7 miles outside of the Fair Channel Bank, and extending parallel to it and the coast, is situated nearly in mid-strait between the Malay and

Sumatra shores. From its N. Western extremity, which is the shoalest part, Mount Formosa bears N. by E. ½ E., and Pulo Pisang E. ½ S. to E. ¾ S.; and from thence to the North end of the Great Carimon, it is a continued narrow bank, having 3½ and 4 fathoms at low water on its N. Western extremity, 4 and 5 fathoms on its middle part, and 6½ to 8 fathoms on its S. Eastern part toward the Carimons. With Mount Formosa bearing N. by E. ½ E. and Pulo Pisang E. ¾ S., we anchored in 4½ fathoms, and the least water found in sounding around with the boats, was 3½ fathoms at low water, soft ground.

The Dublin had 3½ and 3¾ fathoms at low water upon it, Mount Formosa bearing N. by E., which was the least water found, the bottom soft, excepting a cast or two of sand.

The Nottingham had three casts of 4½ fathoms, crossing over the bank, with Mount Formosa N. ½ W., and Pulo Pisang E. ¼ N., and as it was not far from high water at the time, the depth in this place is probably about 3¾ fathoms at low water.

This Long Middle Bank, can hardly be considered dangerous, for it consists mostly of soft muddy bottom, with seldom less than 4 fathoms water on it; excepting the N. Western part, where there are some patches of 3½ or 3¾ fathoms at low water, over a bottom of hard black sand mixed with mud. A ship drawing 21 or 22 feet water, might probably touch at low tide on these patches, but this will seldom or never happen, with proper care. In a ship drawing 20 and 21 feet water, I have frequently crossed over this bank in different parts, without apprehending any danger. It is, however, best to keep in the proper channel, betwixt it and the Malay shore. Both it and the Fair Channel Bank are narrow, but of great length.

Sumatra Bank.

SUMATRA BANK, or third in number from that adjoining to the Malay shore, is situated to the southward of the North part of the Long Middle Bank, about half way between it and the Sumatra shore. This bank is very imperfectly known, for few ships approach the Sumatra coast in this part of the strait. In 1787, the Locko grounded upon it, in 2½ fathoms at low water, sand and mud, with Mount Formosa bearing N. by E. 10 or 12 leagues, Pulo Pisang E. N. E. about 8 leagues, off the Sumatra shore about 3 leagues. Before grounding, she passed over a bank of 4 fathoms, with Mount Formosa bearing N. ½ E., and Pulo Pisang E. N. E. When she floated, they steered N. E., with the boats sounding ahead, shoaled from 5 to 3¾ fathoms, and then deepened to 16 fathoms in the channel betwixt the Sumatra Bank and the Long Middle Bank.

As the Locko passed over several shoal spots, it may be inferred, that this bank, adjacent to the Sumatra coast, is not a continued regular bank, but consists of separated shoal patches.

To pass betwixt it and the Long Middle Bank.

If a ship, in proceeding past Formosa Bank in the night, should, by giving it a wide birth, get far out in the offing, and at day-light find herself to the southward of the Long Middle Bank, she may continue to sail along the outside of it: or if the wind is contrary, she may work to the S. Eastward betwixt it and the Sumatra Bank, there being a safe channel between them, with soundings of 16 to 19 fathoms, shoaling quick on the edge of either bank. It will be prudent to work nearest the edge of the Long Middle Bank, as the Sumatra Bank is not so well known, nor so safe to borrow upon; and when Pulo Pisang is brought to bear about N. E. by E., she may cross over the Long Middle Bank; for on this part of it, she will have 5½, 6, or 7 fathoms, in crossing over it to the eastward, to regain the proper channel.

To sail from the Water Islands to Pulo Pisang.

PULO PISANG, bears E. 32° S., 66 or 67 miles from the Outer Water Island; and when abreast of the latter, at 1 to 3 or 4 miles distance, a S. E. by E. course will carry you about the same distance outside of the bank that fronts Formosa River, if not affected by lateral tides. The flood sets generally fair through the strait from the Water Islands to the Carimons, and the ebb in the opposite direction, about 2 miles per hour on the springs. When Mount Formosa is brought to bear about N. E., keep within 3, or at most 4 leagues of the Malay coast, to prevent falling to the southward of the North end of the Long Middle

Bank. If the weather is clear, and Pulo Pisang discerned, keep it between E. by S. ½ S. and E. S. E. ½ S., until Mount Formosa is brought to bear North or N. by W., in working betwixt the North end of the Long Middle Bank and the coast. Pulo Pisang may be brought to bear S. E. by E., in standing toward the edge of the bank that lines the coast betwixt it and Mount Formosa, excepting about 2 leagues to the N. W. of that island, it forms an elbow, and should not be borrowed on so close; for there, 5 fathoms is found on the verge of it with Pulo Pisang bearing E. 34° S.; but when nearer Pisang, the outer islet may be brought to bear S. by E. or South. When Mount Formosa is brought to bear N. by W., Pulo Pisang may occasionally be brought to bear E. ½ S. or East, in standing toward the Long Middle Bank. The channel is generally 3½ to 4 leagues broad, and the soundings in crossing over the ***Fair Channel Bank***, will be a guide in working through the channel during the night; or you may stand into 10 or 12 fathoms on the edge of the Shore Bank, and off to 18 or 20 fathoms. In day-light, when abreast of Mount Formosa, and Pulo Pisang be visible bearing E. S. E. or E. S. E. ¼ S., steer for it; either of these bearings, will carry you nearly in mid-channel, between the Long Middle Bank and the shore. When Pulo Pisang draws near, its western side, and the 2 islets off it, may be approached within ½ a mile if thought proper, as they are bold close to, with 13 and 15 fathoms within a cable's length of them; and in standing off shore about 3½ leagues from the island, you will be close to, or upon the S. E. part of the Long Middle Bank, where there is 6 or 6½ fathoms on it. In working, when passing Pulo Pisang, tack about 1½ or 2 miles from it, in 14 to 17 fathoms, and stand not off from it above 3 leagues.

Pulo Cocob, the adjacent coast and mud bank.

PULO COCOB, bearing from Pulo Pisang about S. E. ½ E., distant 5 leagues, is a low flat island close to the Malay shore, which may be known by the trees on its N. W. side, being of a bright green colour, low, and resembling grass; but those on its South end, are tall erect poon trees, like those on the adjoining coast, from which it is perceived to be separated by a creek or narrow strait, when the bluff S. E. point of Pulo Cocob that forms the entrance of the strait is bearing N. 16° W. The coast betwixt Pulo Pisang and Pulo Cocob, is lined by a shoal mud bank, with small gaps in it, and projecting spits, which should not be approached under 12 fathoms, for it is generally steep to, from 11 or 12 fathoms. The Gunjavar shoaled suddenly from 14 to 5 fathoms on the edge of it, a little to the S. E. of Pulo Pisang; she had 3 fathoms in stays, and touched the ground, the outermost islet off Pisang bearing N. W. ¼ W., the innermost one N. N. W. ¼ W., distant 2 or 3 miles from Pulo Pisang.

To sail from Pulo Pisang toward Sincapour Strait.

Do not bring the outer islet off Pulo Pisang to the westward of N. W., until 4 or 5 miles past Pisang, in standing toward the shore bank; the western part of Pisang may then be brought to bear occasionally N. W., in working toward Pulo Cocob, or stand no nearer the shore than 11 or 12 fathoms.

In the fair channel, between Pulo Pisang and the Little Carimon, the depth is mostly from 16 to 18 fathoms, differing very little, until the water shoals on the edges of the banks that bound it on either side: when the N. Eastern Brother is on with the North end of the Little Carimon, or nearly so, it is a good mark to tack from the South side of the channel, for the depths begin *then* to decrease quickly on the S. E. end of the Long Middle Bank, when under 13 fathoms. In working during the night, keep the lead briskly going, and do not borrow under 13 or 14 fathoms on either side; with a fair wind, keep in 17 to 19 fathoms about mid-channel.

Little Carimon and the Brothers.

LITTLE CARIMON, bearing from the highest part of Pulo Pisang S. 25° E., about 7, or 7½ leagues, is a high bold island, rising to a peak in the centre, covered with trees, and its North end is in lat. 1° 8½′ N. The round islets, called the Brothers, lie to the N. W. of it, the 2 outermost about 3 miles off, are situated near each other; the other, of similar appear-

ance, lies within a mile of the Carimon, and is not so soon discerned as the 2 outer ones. About 2 miles to the southward of the Brothers, there is a rock above water, not far off the Great Carimon, and entirely out of the track of ships.

GREAT CARIMON, has on its North end 2 high peaked hills, and from thence it consists of low level land, extending about 3 leagues in a S. S. Easterly direction toward the strait of Durian, nearly joining to the northern extremity of Sabon; and its North end, is separated from the Little Carimon, only by a narrow gut. Near the West side of the Great Carimon, there are several low islands of various sizes. Great Carimon.

The Brothers and Little Carimon are bold to approach, with soundings of 18 to 22 fathoms near them, and generally 17 or 18 fathoms in mid-channel betwixt the Little Carimon and the S. E. point of Pulo Cocob, from which it bears S. 15° W., distant 9 or 10 miles: the depths are nearly the same from mid-channel, close to the edge of the bank that projects out from the Malay shore to the distance of 1½ mile; and it stretches from Pulo Cocob entrance, to the eastward around Tanjong Boulus.

TANJONG BOULUS, or BOORO, in lat. 1° 15′ N., about 4 miles S. Eastward from the South end of Pulo Cocob, and 3 leagues N. E. by N. from the Little Carimon, is the southernmost extremity of the Malay peninsula, and of the continent of Asia: it is a broad point of semi-circular low land, having high trees on its western side; and low, bright green mangroves to the eastward. Inland, to the northward of Tanjong Boulus, there is an isolated mount called Pontiana; all the adjacent country is low. Tanjong Boulus,

The mud bank that extends from Pulo Cocob entrance, around Tanjong Boulus, is steep to, on the outer edge, and projects about 1½ or 2 miles from the shore. The Milford grounded on it in 1786. His Majesty's ship Dedaigneuse, in company with the fleet from China, in January 1805, steering W. by N., grounded upon it in the night: she had 8 feet water over the starboard bow, 5 fathoms under the stern, and the anchor laid out with ⅔ of a cable in an E. S. E. direction to heave the ship off by, was in 17 fathoms water. When aground, the N. W. end of Little Carimon bore S. 50° W., South end of it S. 33° W., North Brother W. 28° S., the S. W. end of Pulo Cocob N. 57° W., North side of it N. 48° W., the Eastern rounding of Tanjong Boulus N. 58° E., its Western rounding N. 46° W., the limit between the low green mangroves to the eastward and the high trees westward, bearing North, off the nearest part of the shore about 1¼ mile. Abreast of Pulo Cocob opening, the mud bank projects a little farther from the shore; and 14 or 15 fathoms is near the verge of it in that part. and the adjoining mud bank.

From Tanjong Boulus, the coast trends to the N. Eastward, having near it, Isle Cobra, or Snake Island, on the West side of the entrance of Sincapour Old Strait, which is formed between it and Tooly Island to the S. E. This strait is from ½ a mile to 1½ mile broad, with soundings of 5 or 6, to 10 fathoms; it is bounded on the South side by the island Tooly, the large island Sincapour, and their contiguous islands; and on the North side by the island Salat Boora, and the main. Betwixt the East point of Sincapour Island and Johore Hill, the eastern mouth of the Old Strait communicates with the large strait, now in general use; the former being more contracted, with strong tides, is now seldom chosen by any ship.* Old Strait of Sincapour, and the contiguous Islands.

* Captain Benners, in an American ship, went into the eastern entrance of the Old Strait, a few years back, and anchored at Johore in search of pepper. At leaving that place, he passed to the westward through the Old Strait, backed and filled with the tide most of the way, and had no less water than 5 fathoms, regular soundings.

Inside of the anchorage at the East part of St. Johns, there is a *narrow* passage into the Old Strait, through which Capt. Robert Scott came, when passenger in a Buggess Proa from Gooty, on the East coast of Borneo, bound to Prince of Wales' Island in 1797; and for which, he gives the following directions.

If you intend to proceed through the passage within St. Johns, steer into the bight till you open the strait's mouth, which is very narrow, but deep; having entered it, keep in mid-channel till through, then steer for a

Course from Tanjong Boulus to pass Tree Island. Tides.

FROM abreast of Tanjong Boulus, at 3 or 4 miles distance, the course is about E. S. E. to pass on the North side of Tree Island, and to round the Rabbit and Coney at the entrance of Sincapour Strait; this must however, depend greatly on the direction of the wind and tide, the latter being very irregular hereabout, occasioned by the various islands and channels, and the meeting of the tides. Because, the flood from the Bay of Bengal, continues to set through the strait to the Carimons, and about Tree Island, it meets the flood tide which comes from the China Sea by the strait of Sincapour, producing a division of tides in this place. About Tree Island, the tide sometimes sets fair through the channel, about W. N. W. and E. S. E., 5 or 6 hours each way; and at other times, 6 hours in 1 direction, and 12 or 18 hours in the opposite direction, very irregular. It sometimes sets about N. W. and S. E., frequently North and South in a direct line across the channel, betwixt the Straits of Durian and the West entrance of the Old Strait of Sincapour. After getting 8 or 9 miles to the eastward of the Little Carimon, it is prudent in the night to anchor, for it would *then* be very dangerous to pass Tree Island, on account of the uncertainty of the tides, unless Barn Island is distinctly seen, and its bearing obtained correctly.

## 8th. SINCAPOUR STRAIT; DIRECTIONS FOR SAILING THROUGH IT, INTO THE CHINA SEA.

Sincapour Strait.

SINCAPOUR STRAIT, (called Governor's Strait, or New Strait, by the French and Portuguese) may be considered to commence at Tree Island, which is the first danger in the approach to it, and where the channel becomes narrow; from thence, it extends about 17 leagues to Pedro Branco, situated at its eastern entrance.

Tree Island,

TREE ISLAND or BANK, in lat. 1° 7½′ N., bearing from the North end of the Little Carimon East a little southerly distant about 5 or 5¼ leagues, and from the Coney off the South end of Barn Island W. 9° S. distant 5 or 6 miles, is a bank of rocks and sand very little elevated above the sea at high water, having on it 2 small trees or bushes, separated from each other. From the West and N. W. part, a reef or spit projects a considerable way, on the extremity of which you will shoal the water when passing near, and it ought not to be approached under 13 or 14 fathoms.

to pass it.

In clear weather during the day, the North Peak of the Great Carimon on with the South Point of Little Carimon, is a *fair mark* for passing Tree Island; but in dark weather, or when passing it with clear weather in the night, Barn Island is the best guide.

The South end of Barn Island kept E. by S., is a mid-channel bearing, in passing Tree Island. With a working wind, do not near the shoal on the North side of the channel, more than to bring the South end of Barn Island E. S. E., nor approach Tree Island nearer, than to have the same bearing E. 5° S. Abreast of the N. E. point of Tree Island, we had 13 and 14 fathoms, being near it, with the South end of Barn Island bearing E. 3° S.; but it should not be brought to the Eastward of E. 5° S. or E. 4° S., when abreast of the N. W. end of Tree Island.

Red Island and the Brothers.

RED ISLAND, distant about 2½ miles S. E. by E. from Tree Island, and S. 46° W., 4

small sandy island with a tree on it, which leave on your left hand about ½ a mile; afterward, keep near the starboard shore till you open the mouth of the narrow strait leading into the Old Strait of Sincapour, and keep nearly in mid channel, as both sides are fronted by some sunken rocks. After getting in, there are 5 and 6 fathoms all through the strait; and when clear out, you will see the North part of the Little Carimon bearing W. by N., steer then about W. S. W. ½ S., till past Tanjong Boulus, and afterward steer for Pulo Pisang. If chased by an enemy, this passage might be tried, and should you not like to venture the whole of the way, you might probably save your vessel by getting inside of this strait, although it is too narrow for large ships.

miles from the Coney, is small, with a beach of red sand, and covered with green trees. The Brothers, about 1½ mile S. E. by S. from Red Island, are 2 islands near each other, covered with trees; the northern 1 called Long Island, is largest and low, the other or Round Brother, is small, and considerably elevated.

Passage betwixt Tree and Red Island;

There is a passage to the southward of Tree Island, and betwixt it and Red Island, through which the ship La Paix, Capt. Wright, sailed on her voyage from Bengal to China, in July, 1805. They carried soundings of 15 and 20 fathoms to the southward of Tree Island, and shoaled to 8 fathoms soft bottom when abreast of Red Island, about ½ a mile distant.

Shoals probably render it unsafe.

A shoal is said to lie about 2 leagues E. S. E. ½ S. from the North end of the Little Carimon, and W. 19° S. from Barn Island; but the rock now to be described, were there no other dangers, makes the passage pursued by the La Paix, very unsafe.

In December, 1811, the Charlotte, with several other ships under convoy of H. M. S. Clorinda from China, rounded the Coney in the night, and the wind being scant from the northward, in hauling up for the Carimon, they fell to leeward of Tree Island,* which was seen on the weather bow. At this time, most of the ships tacked, but the Charlotte grounded on the KENT ROCK, which is about 20 feet square, having on it 2½ fathoms, with 5½ and 6 fathoms all round, deepening to 8, 10, 15, 17, and 35 fathoms at a small distance to the N. Eastward of it. When upon the rock, Tree Island bore from N. 63° W. to N. 85° W., Red Island S. 57° E., just touching the East end of Long Island, Round Island S. 51° E., the Rabbit a sail's breadth open with St. John's N. 67° E., Coney N. 72° E., Barn Island N. 54° E. to N. 65° E. She lay on the rock till high water, then floated off, and when aground on it, the tide ran past her about 4 knots to the southward; whilst the other ships, and the frigate at anchor within 2 cables' lengths of the rock, experienced a tide only of 1 knot per hour.

Kent Rock.

This appears to be the same rock, on which the ship Mandarian was lost the year before, and it seems to have been known to English navigators at an early period. In the Kent's journal, February, 1708, is the following remark, "after rounding the Rabbit and Coney close, came no nearer Tree Island, (probably Red Island,) than 30 fathoms, being the lee side, and an *ugly rock* in the channel, which I have struck upon formerly, is unknown to most persons which come this way: its about 3 miles East from the easternmost single tree on the Sandy Island," (Tree Island.)

Sultan's Shoal.

SULTAN'S SHOAL, on which the ship of this name grounded in 1789, has only 3 feet rocks on the shoalest part at low water; near the edge of it, there are from 3 to 4, 5, and 6 fathoms, and about a cable's length off it, 12 fathoms. When aground on it, the North end of the Little Carimon bore W. by S. ½ S., an island near the old strait entrance N. W. by N. Northerly, the South end of Barn Island E. S. E. ½ S., and the Rabbit and Coney just open, distant about 6 miles. This shoal is about 5 miles N. Westward from Barn Island, and nearly the same distance to the northward of Tree Island, being the only danger known on the North side of the channel between Tanjong Boulus and Barn Island.

Soundings in the channel, and near the shoals.

The soundings in the fair channel between Tree Island and the Sultan's Shoal, are irregular, from 15 to 25 fathoms; generally 14 to 16 fathoms near Tree Island, deepening to 22 and 24 fathoms in the North side of the channel, until the decrease is sudden to 12 and 8 fathoms on the edge of the Sultan's Shoal. In that part of the channel comprised be-

* After rounding the Coney in the Gunjavar, in 1789, and hauling up W.N.W. with the wind at North, the night became very dark, lost sight of Barn Island: we thought the tide was setting fair through the channel to the W.N.W., but having lost the lead, the first cast after preparing another, was 5 fathoms; the helm was instantly put down, and the anchor let go when the ship came head to the wind, and found the tide setting South. day-light, we had not room to cast until the wind shifted, being within a cable's length of the rocks pro- from the S. E. end of Tree Island.

twixt Tree Island and Barn Island, the depths are mostly from 16 to 9 fathoms, but there
Anchorage. are some banks of 6½, 7, 8, and 9 fathoms in the fair channel, proper for anchorage; and on the West side of Barn Island, at ¾ to 1½ mile off it, there is good anchorage in 8 to 11 fathoms out of the stream, where ships may stop tide, or anchor during the night.

Barn Island; BARN ISLAND,* bearing E. ¼ N. 7 or 7¼ leagues from the North end of the Little Carimon, and E. by N. ½ N. 5 miles from Tree Island, is moderately elevated, of a square level aspect, covered with trees, and discernible at 5 leagues distance; it is bold to approach on the West side to 8 or 10 fathoms, about ½ or ¾ of a mile off, but the shore is rocky at low water, in landing with a boat.

Aligator Island; ALIGATOR ISLAND, nearly joins to the N. W. end of Barn Island, the space between them affording no passage for ships; it is about the same size and height as Barn land, of a sloping form, 1 end lower than the other: this island may be approached on the S. W. side occasionally to 9 or 10 fathoms, about ¾ of a mile, or 1 mile off. To the northward of it, there is another island, eastward of the Sultan's Shoal: and all these islands, extending from Barn Island to the entrance of the Old Strait, and to St. John's, are united by reefs and dangers, mostly covered at high water.

adjacent islands and reefs.

Rabbit and Coney. RABBIT and CONEY, are 2 small round islets, connected with the S. E. end of Barn Island by a reef of rocks partly dry at low water; the Coney or outermost, is the smallest, distant from the point of Barn Island about ½ a mile. The Rabbit is on with the centre of Barn Island bearing N. 51° W., the Coney is on with it N. 33° W., and these islets are on with each other bearing N. 19° E.

Directions. Ships keep near the Coney in passing, as the depths within 2 cables' lengths of it are from 20 to 25 fathoms. In working here, do not stand far over toward the South Shore, in case of falling calm; for the water is deep on that side, with a rocky bottom unfavorable for anchorage, and some dangers exist, not visible at high water.

To sail from the Little Carimon to the Coney. When in mid-channel between Tanjong Boulus and the Little Carimon, in 17 to 20 fathoms water, steer E. S. E. or S. Eastward, as the prevailing wind and tide require, observing to bring the North point of Little Carimon W. ½ S., or to draw gradually the North Peak of Great Carimon in one with the South point of Little Carimon, bearing about W. by S. ½ S., which will carry you about 2 miles to the North of Tree Island. If the wind is southerly, borrow toward it to 14 fathoms, about a mile distant, (but no nearer) which will favor you in rounding the Rabbit and Coney. The South end of Barn Island kept E. ½ S., is the best guide in passing Tree Island with a southerly wind; E. by S. is the mid-channel bearing; and in working, you may traverse with it bearing from E. 5° S. to E. S. E., in passing between Tree Island and the Sultan's Shoal. Having passed Tree Island, a S. Easterly course should be steered, to round the Coney at from 2 cables' lengths to 1 or 1½ mile distant; or if the wind and tides are adverse, or a dark night coming on, anchor to the westward of Barn Island, out of the strength of the tides.

The channel from the Coney to ST. JOHN'S South Point, or the small islets close to, and appearing as part of that island, bear from the Coney E. 25° N., distant 11 miles. A direct line, or strait course between them, is the fair track along the North side of the channel, in irregular soundings mostly from 18 to 30 fathoms, sand and gravel, or rotten rock, where you may anchor occasionally; but the South side of the strait, must be avoided, the depths there being great, and the bottom rocky and dangerous. St. John's is composed of 2 moderately elevated sloping islands, extending North and South, separated by a narrow gut, with 4 fathoms water in it quite

* Called Square Island, or Passage Island, by the French.

through; and they appear as 1 island, with a regular convex outline, until close to their southern extreme, when the gap between them is perceived. Close to the South point of each, there is a small islet, which are steep to, having 18 to 25 fathoms within a cable's length of them. About a mile, or rather less, to the westward of the South point of St. John's, there are 2 small round islands, with 20 or 25 fathoms near them on the S. E. side, but rocks join them to the northward.

Middle Island.

MIDDLE ISLAND, situated on the North side of the channel, rather nearer to St. John's than to the Coney, is a low green island, with others extending from it to the N. Westward. A spit or prong, projects from the S. E. end of Middle Island; and to the E. S. Eastward about a large mile from it, there is a Reef of Rocks always covered, except at very low tides, some points of the rocks being then just discernible, even with the surface of the water. There is deep water inside of this reef, for the Carron, and other ships returning from China in 1804, after passing from St. John's toward the Coney in the night, got on the North side of it, having hauled over too much in the North side of the channel. The reef being a steep coral wall on that side, the Carron rubbed against it without receiving any damage. Some of the Europe Fleet from China in 1809, also got within this reef during the night; and the ship Dart struck on it, by standing too far over to the northward in working. The South point of St. John's kept E. N. E. ½ N., carries a ship clear of it to the southward. The North side of the channel between Barn Island and Middle Island, is bounded mostly by shoals and coral reefs, partly dry at low water.

Reef near it.

Other reefs on the North side of the channel.

Dangers in the South side of it.

DANGERS in the South side of the channel, are 1st, a reef of rocks about 3¾ or 4 miles to the S. Eastward of the Coney, always covered, except at low water it is partly visible. The Snow Forth anchored in 40 fathoms about ½ a mile from this reef, and was obliged to cut from her anchor, it having hooked a rock.

Buffalo Rock.

BUFFALO ROCK, about 4 miles N. Eastward from the former, bears East or E. 1° N. from the Coney 6 or 6½ miles, from the South point of St. John's S. 34° W. about 5½ miles, and from the centre of Middle Island S. 23° E. distant 4 miles, being situated nearly in mid-strait betwixt the latter island and the southern shore. It is a black rock about the size of a long boat, always seen above water, with soundings of 40 to 60 fathoms around. The ship Soliman Shah, having got over on that side of the strait during light winds, was drifted by the tide close to the Buffalo Rock, and let go her anchor in 60 fathoms, from which she cut when a breeze sprung up, to keep clear of the danger. Betwixt the Buffalo Rock and the reef off the S. E. end of Middle Island, is the narrowest part of the strait; it is prudent in working here, to keep nearest the North side of the channel, making short tacks, and not to deepen above 30 or 34 fathoms toward the Buffalo Rock, and the South side of the strait.

Two Rocky Ledges.

TWO LEDGES OF ROCKS, bearing S. 42° E. and S. 45° E. from the gap, or South point of St. John's, distant 5 or 5½ miles, and about 2 leagues eastward from the Buffalo Rock, lie near each other, and part of them is always visible above water. There are overfalls, and shoal water near them to the N. E. and Eastward, which with the dangers before mentioned, make it prudent to avoid the South side of the strait, until several miles to the eastward of St. John's.*

* It has been said, that recently an American ship passed along the South side of the strait, betwixt it and the Buffalo Rock, and these ledges to the S. E. of St. John's, without discovering any other dangers; but there is great reason to think, that the bottom is generally rocky on that side, and the tides very irregular, occasioned by various inlets among the islands which form it; the passage along it, must therefore be narrow, intricate, and dangerous, and ought not to be attempted. Even were it surveyed, the northern channel being wider, would be more preferable.

Tides.

THE TIDES set fair through the channel about E. N. E. and W. S. W. between the Coney and St. John's, frequently very rapid, with eddies on the springs. Their velocity when strongest, is from 4 to 4½ miles per hour, making it unpleasant to anchor here in large ships when the weather is unsettled in the night, particularly if unacquainted. When the weather is favorable, and the tides moderate, you may conveniently anchor in any part of the North side of the channel, betwixt the Coney and St. John's, should calms or other circumstances render it necessary to stop tide; but the best anchorage is fronting Middle Island, upon a bank of rotten rock and course sand, having soundings on it from 15 to 18 fathoms.

How to act if a cable part in the night.

If at anchor during the night, the weather becomes squally, making a ship sheer about with a strong tide, and part her cable, do not let go another anchor, except it be very dark; but run as the wind permits, either round the Coney, and anchor to the westward of Barn Island, out of the tide; or round the South point of St. John's, and anchor on the East side of it, in 12 to 16 fathoms. With the body of this island bearing from W. S. W. to S. W. by W., about 1½ or 2 miles off the beach, the anchorage is good, upon a bank of mud, where the tide is very weak, being broken by the Island St. John's. In approaching this anchorage, reduce sail in time, as the depths in coming from the eastward, decrease quickly from 30 and 26, to 16 fathoms on the bank, and it would be imprudent to anchor under 12 or 14 fathoms, particularly in the night, for shoal water and rocky bottom, stretch out from the North end of St. John's. Here, or on Barn Island, firewood may be procured, and at a little distance from the shore of the gap that separates the 2 islands of St. John's, there *is said* to be a pond of good water on the easternmost island, overshaded by the trees.

Anchorage under St. John's.

Wood and water.

Abreast of the South end of St. John's, a ship ought not to anchor if it can be avoided, for the water is deep, and the tides run in eddies, with greater rapidity than in any other part of the strait. The flood has been observed in both monsoons, to run to the westward 10 or 12 hours at a time, or even 18 hours, strong and weak, alternately; at other times, the flood sets only 6 hours to the westward, and the ebb the same length of time to the eastward, but the tides throughout Sincapour Strait, are seldom very regular. The perpendicular rise and fall, is about 12 to 14 feet on the springs.

Set of the tides irregular.

To sail through the channel from the Coney to St. John's;

THE CHANNEL betwixt the Coney and St. John's, should not be attempted in the night, if unacquainted, or the weather not be clear; but in settled weather, there is little danger to be apprehended in passing through the channel with the tide, in a handy middle sized ship, even with a contrary wind, if a little acquainted, by attending to the following instructions.

If the night is not very dark, either Barn Island or St. John's will be visible, and when midway between them, both at the same time. As a guide, use the South end of either of these islands, which ever is most conspicuous. The South end of Barn Island W. ¾ S. to W. by S. ½ S. are good bearings; or the South end of St. John's from N. E. by E. to E. N. E. ½ N.; but when near it, the South end of this island may be brought from E. N. E. ½ N. to N. E. in working. The narrowest part of the channel, is when the Buffalo Rock bears S. by E. to South, betwixt it and the reef projecting to the eastward of Middle Island; and to know in the night, when you are in this part of the channel, Middle Island will in general be perceived nearer, and more distinctly than the other islands on the North side of the channel. When approaching the meridian of the Buffalo Rock, observe, that it bears S. 23° E. from the centre of Middle Island; when, therefore, this island is bearing about N. N. W., keep the South end of St. John's E. N. E. ½ N. to E. N. E. ¾ N., or the South end of Barn Island W. by S. ½ S., which is a good bearing until about 2 miles to the eastward of Middle Island; being then past the reef on the North side of the channel, and well to the eastward of the Buffalo Rock, steer direct for the South point of St. John's, or make short tacks if the wind is contrary, to pass it at a small distance.

FROM THE SOUTH END of St. John's, Pedro Branco bears E. by N. distant 11 or 12 leagues, and until several miles past St. John's, the South side of the strait must be avoided, on account of the ledges of rocks and overfalls already mentioned; but the North side is safe to approach to 12 or 14 fathoms, betwixt St. John's and the Red Cliffs near the East end of Sincapour Island, for the depths along the South side of this island, decrease pretty regularly from 36 or 40 fathoms in mid-strait, to 14 and 12 fathoms within 1 mile of the shore, all good anchoring ground. The depths in mid-strait, are generally between 32 and 45 fathoms from St. John's until nearly abreast of the Red Cliffs, and then decrease to 20 or 18 fathoms: they are irregular from 12 to 16 fathoms near Battam N. E. Point, which bounds the entrance of Rhio Strait on the West side, and bears E. ¼ S. from the South end of St. John's, distant 3½ or 4 leagues. and from thence to the eastward

The Southern Shore, adjacent to Battam N. E. Point, is safe to approach within 2 or 3 miles, but mid-strait is the best track with a fair wind, or even in working, to benefit by the strength of the tide, when it is favorable. If in deep water, and losing ground, haul in toward the Sincapour side, and anchor in 15 to 18 or 20 fathoms. When the East part of the Red Cliffs, or the East end of Sincapour Island is brought to bear about N. by W., the North side of the strait ought not to be approached nearer than 2 leagues, but mid-channel track must be preserved, in passing the shoal off the entrance of the old strait of Sincapour. The South coast of Sincapour Island, is level and woody, with 2 Red Cliffs, 1 of which being to the northward of the East point, is not visible unless the entrance of the strait is well open: the opposite side of the strait is also woody, but not so level as the former.

JOHORE SHOAL, is composed of hard sand, having 2½ fathoms on its shoalest part at low water, 3 and 3½ fathoms on its southern extremity, and from 12 to 14 or 15 fathoms very near to it, on the South, East, and Western sides. The South end of St. John's bears from its eastern extremity S. W. by W. ½ W.; Johore Hill N. N. E., South Cape of Johore E. by N. ½ N., and it is 3 or 4 miles distant from Johore Point, and 4 or 4½ miles distant from the East point of Sincapour Island, directly fronting the entrance of the Old Strait of Sincapour: a small hill on the East side of this strait, to the northward of Johore Hill, called False Johore Hill, bears North from the East end of the shoal, and this small hill is in one with the East point of Sincapour Island bearing N. 40° E. As the water shoals quickly from 17 or 18 to 15, 12, then 4 fathoms on its eastern extreme, do not borrow under 16 or 17 fathoms toward it, but keep about mid-strait in the night, attending to the lead if your distance from either shore is not distinctly perceived. In day-light, the Island St. John's kept W. by S., is a fair bearing in passing the shoal, and also in passing through the strait to the eastward. Captain W. Owen examined this shoal in H. M. brig Seaflower, in April and September, 1807, and found it extend from the easternmost Red Cliffs of Sincapour Island in a long flat spit to the eastward, with 2½ fathoms on it at low water, and no apparent passage between it and that island, except for small vessels, but the water shoals gradually toward its western part. Between the East end of the shoal and Johore bluff point, there is a safe channel 2 or 2½ miles wide leading into the old strait of Sincapour, with depths of 8 to 12 fathoms, decreasing to 5 and 4½ fathoms near the shore, and to 6 fathoms near the North side of the shoal. To avoid Johore Shoal in coming from the eastward, come no nearer to the North shore than 17 fathoms after Johore Hill bears North or Barbucit Hill N. E. ¾ E.* The breadth of the channel from Johore Shoal to Battam N. E. Johore Shoal. with directions.

* The Kent in February, 1708, from Point Romania, kept in 10, 12, and 13 fathoms to Johore Point, and in steering out to the southward got 4 fathoms on Johore Shoal, and the boat near the ship had 3 and 2½ fathoms coral rocks. Her journal has the following remark; "To avoid this dangerous shoal, let no one come nearer the Bluff White Sandy Point (Red Cliffs) that forms the West side of the entrance into Johore, than 12 fathoms, which is about 5 miles off shore." In the London's journal, 26th of June, 1700, it is stated, that Johore Shoal projects the strait's breadth from the western shore. This ship lay about a month at Johore, taking in pepper.

Point, nearly opposite to it, on the South shore, is about 6 or 7 miles, and the soundings between them, are mostly from 20 to 24 fathoms in the fair track, decreasing toward the edge of the shoal, and also near the South shore to the westward of the point; but to the N. Eastward of this point, off the entrance of Rhio Strait, there are 30 and 34 fathoms in some places. Close to Battam N. E. Point, there is a small island with rocks contiguous to it.

Johore Hill and the adjacent coast.

JOHORE HILL, is of a regular oblong sloping form, covered with trees, situated a little inland from the bluff called Johore Point, which forms the East side of the entrance of the old strait of Sincapour; a little inside of which, the river and town of Johore is situated, formerly a place of considerable trade, but now unfrequented. Betwixt the East point of Sincapour Island and Johore Shoal, there is no safe passage for ships of large size, the shoal being joined to the point by a spit of 2 and 2½ fathoms, which Captain Court passed over in a small vessel.

Barbucit Hill and the coast near it.

BARBUCIT HILL, in lat. 1° 24½′ N., bearing from Pedro Branco W. 17½° N. distant 14½ miles, is a regular pyramid rising from the low land, about 2½ leagues E. N. Eastward from Johore Hill; and being only about 5 miles inland from Point Romania, it is used as a mark in entering the strait. About mid-way between Johore Point and Barbucit Hill, the land of Johore projects farthest to the southward, and is called the South Cape, which bears nearly E. ½ S. from Johore Point, and West from Pedro Branco; the land between it and Johore Point forms a bay, with shoal water in it, but the depths decrease gradually. There is an indifferent watering place in this bay, near the second point to the westward of the South Cape, inside of a low black rock, situated near the shore.

Point Romania, the contiguous bays, and watering places.

POINT ROMANIA, in lat. 1° 22½′ N., distant about 5 miles to the E. N. E. of the South Cape, forms the S. E. extremity of the Malay Peninsula; which, with the circumjacent coast, is level land, and covered with trees. Close to Point Romania on the West side, lies Romania River, having 2 or 3 feet water at its narrow entrance, at low tide, and is navigable by boats 2 or 3 miles inland. Although nothing is found here but timber, fish, and reptiles, water may be procured with ease in this river, during the N. E. monsoon; but there are several better and more convenient watering places, in the sandy bays betwixt Point Romania and a small round island called Watering Island, about 3 miles to the westward, directly under Barbucit Hill. Inside of this island, there is an excellent stream of fresh water upon the main, where water may be got with facility in either monsoon; but in the N. E. monsoon, the streams betwixt it and Point Romania are more convenient. In the eastern extremity of the long sandy bay, which contains Watering Island at its western part, there is a large rivulet, having shoal water projecting a considerable way out from the entrance, with rocks containing beds of excellent oysters.

The coast safe to approach.

The whole of the coast of Johore, from Johore Point to Point Romania, may be approached by the lead; the water shoals quickly from 25, to 15, 11, and 10 fathoms, on the edge of the bank that fronts it, then more gradually to 4 fathoms, and there is *thought* to be no danger at the distance of ½ a mile from the shore. Some spots lie near the shore betwixt Johore Point and Point Romania, 1 of which has 7 fathoms on it, and 13 fathoms around; but there is said, to be no less water on any of these detached spots.

Romania Islands, and the rocks or reefs near them.

ROMANIA ISLANDS, fronting the point of this name, are 6 in number, the westernmost or largest 1 is composed of 2 islands very near each other, joined by a reef. The northernmost, and S. Easternmost, are 2 barren rocks, but the others are covered with trees; they extend about 2½ miles N. E. and S. W., the largest being within a mile of the point, and the nearest to it. There is a rock about 12 feet above water near the South point of

South Island, and a reef called the South Reef, consisting of straggling rocks and extending to the eastward, which are bold to approach on the South side.

The Whales Crown, a rock scarcely visible at high tide, lies $\frac{3}{4}$ of a mile or more, to the eastward of the South reef, having 7 fathoms close to it, and 8 or 9 fathoms around. There is a shoal S. W. from the northernmost islet, about a cable's length, the other rocks amongst these islands are mostly above water, and there is 7 fathoms between the South reef and the islands; there is also deep water around the large island, and betwixt it and the others, with soft bottom, excepting near the rocks. The South reef extends N. E. and S. W. about 3 cables' lengths; from its S. W. point, the bluff next Point Romania bears N. by W. $\frac{1}{2}$ W., Barbucit Hill on with the North Hump of the Large Island W. by N. $\frac{1}{2}$ N., and the point of Watering Island West, having on it a remarkable green tree.

INNER CHANNEL, between Point Romania and the islands, may be considered safe for small vessels, with a leading wind, and forms a good harbour in the S. W. monsoon, the bottom being all soft. Captain Owen, in H. M. brig Seaflower, found no less water than 5 fathoms in the *fair way*, in the northern part of the channel, which appeared clear, and of width sufficient for small ships; other navigators have found $4\frac{1}{4}$ or $4\frac{1}{2}$ fathoms at low water, in some places. Point Romania, is bold to approach, having 4 fathoms within 30 yards of it, 7 fathoms a little farther out, deepening to 12 fathoms toward the largest island, which is nearly 1 mile distant from the point. A ship entering the channel from the southward, or leaving it, may borrow toward the South reef and largest island, where the depths are greater than near the main; and the best track betwixt it and the other islands, is about mid-channel, or rather nearest the islands, where the depths are generally from 5 to 9 fathoms. Inner Channel.

There is an excellent watering river close round the Rocky Point, about 4 cables' lengths to the northward of Point Romania; the country abounds with various kinds of timber, wild elephants, buffalos, mouse-deer, hogs, guanas, monkies, peacocks, &c. with oysters upon the rocks; and it is not inhabited, hereabout. Near Romania River there is a considerable extent of forest, without much underwood, which is easily penetrated; but in other parts, the woods are generally impervious. and contiguous coast.

ROMANIA OUTER REEF, is formed of detached spits of sand and patches of coral rock, on which the least water appears to be $2\frac{3}{4}$ fathoms; and there are channels or gaps of deep water from 6 to 10 fathoms betwixt some of them. The best of these channels, is formed betwixt the westernmost patches of the outer reef, and Romania Islands; being bounded on the West side by these islands, the South reef, and Whale's Crown, adjoining to them. In this channel, the depths are from 8 to 12 fathoms, which is used by the Chinese Junks: but there being no proper marks, it ought not to be attempted by European ships, until it is better explored. Should a ship from necessity use it, she ought to pass to the eastward of the islands about 1 or 2 miles distance off them, taking care to haul well out when abreast of the southernmost, to give a birth to the Whale's Crown and South reef. Romania Outer Reef.

The patch of the outer reef nearest to Pedro Branco, bears N. N. W. $\frac{3}{4}$ W. from it $4\frac{1}{2}$ to $4\frac{3}{4}$ miles, which is steep to, and dangerous, having on it 18 feet rocks. On this patch, the Anna struck in December, 1800: with the wind N. Westerly, rounding the edge of the reef very close, in soundings from 12 to 9, and once 7 fathoms, a strong ebb tide running to the northward, horsed us amongst the eddies upon the reef, and we had several casts of 7 fathoms. The outer edge of it formed a steep wall, very conspicuous by the deep blue water outside, and white discoloured water within, where the ship touched the rocks in hauling off the reef, although drawing only 19 feet water. She took a considerable careen by the fresh and strong tide, and grazed over the rocks into 12 fathoms the first cast, Pedro Branco then S. S. E. $\frac{3}{4}$ E. about $4\frac{3}{4}$ miles, southern island off Point Romania W. S. W. $\frac{1}{4}$ S.,

South point of the largest island W. by S. ¼ S., and its southernmost hump in one with the South Cape or westernmost point of Romania. A few cables lengths to the southward of this dangerous patch, the depth increases to 16 and 17 fathoms, and it is thought to be the S. Westernmost danger of the outer reef.

To the N. Eastward of the patch last mentioned, there are several others, with 3 and 3½ fathoms on them: the outermost of these, among which H. M. S. Panther got embarrassed, are extensive, and their southern part bears from Pedro Branco N. by W. ¼ W. to N. by W. ¾ W. distant 5 or 5½ miles; they stretch from thence to the northward 1 or 1½ mile, and have 9 and 10 fathoms close to them on the East and S. E. sides. Another spit to the N. Westward of these, bears N. N. W. from Pedro Branco, and E. by N. from Barbucit Hill; between them, the ship General Baird passed, in 6, 8, and 10 fathoms water.

The northernmost patch of Romania outer reef, is in lat. 1° 31′ N., distant from the coast abreast about 10 miles; from Bintang Hill it bears N. 3° W., from Pedro Branco, N. 9° E. distant 11 miles, and about the same distance from the northernmost Island off Point Romania; from the Largest Island it bears N. 52° E., from Barbucit Hill N. 65° E., and about E. ½ N. from False Barbucit Hill. There is probably no danger on this patch, although the Seaflower had overfalls of 6 and 7 fathoms hard sand on it; but the Hornby shoaled suddenly from 13, to 10, 7, 5, and 4½ fathoms upon it, in coming from the northward, and deepened in hauling out to the eastward as fast as the lead could be hove, to 5, 7, 10, 11, 12, 13, and 14 fathoms; it ought, therefore, to be avoided, as 4½ fathoms is too little water for a large ship when there is much swell. Betwixt this northernmost patch of the reef, and the opposite coast, there is thought to be no danger, the depths inside of it being generally from 10 to 15 fathoms; and there seems to be a channel or gap of deep water to the S. W. and Southward, between it and the other patches of the reef.

False Barbucit Hill.

FALSE BARBUCIT HILL, in lat. 1° 30′ N. is a low sloping hill near the sea, appearing like a tope of trees a little more elevated than the adjacent coast, which is all rather low and woody to the northward of Barbucit Hill. The False Hill being discernible much sooner than the other during hazy weather, in coming from the North toward the northern extremity of the outer reef, answers as a guide in the approach to it, and bears from Pedro Branco N. 45° W.

Geo. site of Pedro Branco;

PEDRO BRANCO (or White Rock) situated in the middle of the entrance of Sincapour strait, is in lat. 1° 20′ N. lon. 104° 25½′ E. or 2° 10½′ E. from Malacca, and 9 miles West from Pulo Aor, by mean of many chronometers:* from the largest island off Point Romania, it bears E. 15° S. distant 9 miles, and the same distance from the shore of Bintang, and is in one with the centre of Bintang Hill bearing S. 12½° E. It is small, of white appearance, by birds' dung, not much elevated at high tide, but may be seen 9 or 10 miles from the quarter-deck of a large ship, being just visible when Point Romania bears North, distant 3 or 4 miles; in the night, it cannot be discerned until close to. On the North and N. W. sides, Pedro Branco is steep to, having soundings of 17 fathoms close to the rock, and 30 to 36 fathoms near it, decreasing to 16 and 17 fathoms to the northward, close to the edge of Romania Reef: to the southward, it is dangerous to approach, for 2 ledges of rocks called the S. E. Rocks, near each other, lie about a mile or more to the S. S. Eastward off it, which are very little above the surface at high water. But the S. W. Rocks, is the *principal* danger, when proceeding through the South channnel, which consist of 3 pointed rocks very little detached from each other, with 8 and 9 fathoms close to, and betwixt them, 16 or 17 fa-

the adjacent dangers, and soundings.

*By many chronometric admeasurements in different voyages to China, corresponding within a mile of each other, I made it in this longitude; but some navigators have made it 2, 3, and 4 miles more easterly. Captain Keith Forbes, landed on the S. E. part of Pedro Branco on the 13th of April, 1813, and had 17 fathoms close to which was covered with oysters at the water's edge, from whence a small boat might be filled in an hour.

thoms at a very small distance in the stream of them. They bear from Barbucit Hill E. 27° S., from Pedro Branco S. 16° W. distant about 2½ miles, are not visible until the ebb has been made some time, and they are nearly covered before the stream of flood begins to run; from 16 and 17 fathoms close to this danger, the depths decrease to 8 fathoms, within 2 miles off the Bintang shore, and from 8 to 6 and 5 fathoms, near that shore.

Geo. site of Bintang Hill and Island.

BINTANG HILL, in lat. 1° 2′ N., lon. 104° 30′ E., bearing S. 12½° E. from Pedro Branco, distant about 6½ leagues, in clear weather may be seen 14 leagues, and answers as a mark in approaching the entrance of the strait from the northward. When viewed from that direction, it forms a saddle, and adjoining to it on the North side, there is a small conical hill called False Bintang Hill, the summit of which is central with the saddle of the large hill bearing S. 6° E. When the centre of the Saddle bears South, the summit of the False, or Little Hill, is just open with the western shoulder of the Large Hill, and this mark or bearing of Bintang Hill, is a safe guide to carry a ship to the eastward of, but pretty near the outer reef of Romania.

The North side of the Island Bintang, extends nearly E. ½ N. and W. ½ S. about 7 leagues; like most of the other land bounding the Strait of Sincapour, it is covered with trees, and excepting the hills inland, not much elevated. About 1½ mile from the shore, to the N. Eastward of the point that bounds the entrance of Rhio Strait on the East side, there is a small island which may be approached within 1 or 1½ mile, or to 14 or 12 fathoms on the North and West sides; and the Bintang shore may be borrowed on, in general to 7 or 8 fathoms, when ships are proceeding through the South channel.

Bintang, is the largest Island on the South side of Sincapour Strait; Pulo Battam on the West side of Rhio Strait, is also of considerable size, from whence, a chain of islands of various magnitudes, separated by narrow guts, extends westward nearly opposite to the Rabbit and Coney. Small vessels proceeding through the strait, ought to be on their guard, to resist any attack from the Malay Pirates, who frequently lurk in their proas amongst the islands on the South side, or about the Old Strait, near the island of Sincapour.

A caution.

Eastern Bank.

EASTERN BANK, extends from the N. E. part of Bintang, about North and N. by W. 7 leagues, having soundings upon it generally from 10 or 11, to 13 and 14 fathoms. To the distance of 2 or 3 leagues from the N. E. part of Bintang, the depths on it are 10 to 12 fathoms; East from Pedro Branco about 2 leagues, they are irregular, 16 or 18 fathoms in some places; and 11, 12, to 14 fathoms within 1 or 2 miles of that rock on the East side. To the E. N. E. and N. E. of Pedro Branco, about 3 or 4 leagues, the soundings are generally pretty regular on the Eastern Bank, 13 to 14½ fathoms, sand and gravel: and in standing off it to the eastward, they gradually increase to 20 fathoms, at 2 or 3 leagues distance. On the northern part of the Eastern Bank, in lat. 1° 32′ N., there is a ***shoal patch***, the least water on it 8 fathoms hard bottom, to 10 and 11 fathoms the general depth. It is of small extent, Bintang Hill bearing from it S. ½ W., Barbucit Hill about W. S. W., False Barbucit Hill W. ¾ S., and the northernmost patch of Romania outer reef W. ½ S. or W. by S., distant 4 or 5 miles. Ships getting soundings of 8 to 10 fathoms on this patch of the Eastern Bank, during hazy weather, sometimes think they are on the northern patch of Romania outer reef, then haul more to the eastward, which renders them liable to fall to leeward of the strait, if unacquainted.

On its northern part there is an 8 fathoms patch.

Soundings near Romania reef, and in the entrance of the strait.

THE SOUNDINGS are mostly 13 to 15 fathoms, a little irregular in some parts, to the distance of 4 or 5 miles northward from the northernmost patch of Romania outer reef, and from the patch of the Eastern Bank; and they continue nearly the same, until within 3 or 4 miles of the coast: farther to the northward, the depths decrease gradually in steering for Pulo Aor, with a regular decrease contiguous to the main land.

Between the shoal patch of the Eastern Bank, and the northernmost patch of the reef, the soundings are a little irregular from 13 to 17 fathoms. Farther to the southward, between the Eastern Bank and the reef, the water deepens to 19, 20, and 22 fathoms; and when Pedro Branco is approached, soundings of 32 to 36 fathoms are found near it to the northward and N. W., decreasing in the North side of the channel to 17 or 16 fathoms sand and gravel, near the southern patches of Romania Reef. To the S. W. and westward of Pedro Branco, the soundings near it are 34 to 28 fathoms; but there are some small banks W. by S. and W. by S. ½ S., about 5 miles from it, with 10 to 15 fathoms water on them, and 20 to 30 fathoms around. Some ships have been in great danger, by getting shoal soundings in this situation, mistaking them for the soundings on the edge of Romania Reef, when attempting to pass out of the strait between Pedro Branco and that reef, in the night. From Romania Islands westward, the strait is clear to Johore Shoal, and the soundings 18 to 25 fathoms in the fair track, rather more than mid-strait toward the northern shore, decreasing regularly to the latter. In mid-strait, the depths are from 26 to 32 fathoms, decreasing to either side; and the only danger to be avoided in making long tacks, is the Pan Shoal within the entrance of Rhio Strait, which has been described in the directions for sailing through that strait; but it is out of the track of ships proceeding through the Strait of Sincapour.

Tides.

THE TIDES near Pedro Branco, and contiguous to the reef off the Islands and Point Romania, are frequently very irregular, in time, velocity, and direction. In the strength of the N. E. monsoon, when the current runs to the S. S. Eastward from Pulo Aor across the equator, the flood sometimes runs into the entrance of the strait to the S. Westward, 10 or 12 hours at a time; but the ebb generally runs with the greatest velocity, and of longest duration, in both seasons, particularly in the S. W. monsoon. About the full and change of the moon, the ebb often sets out strong during the night, for 10 or 12 hours together, but not very rapid in the first and latter part: at other times, it is fluctuating, and not strong. Betwixt Pedro Branco and the edge of Romania Reef, the strength of the ebb runs generally about N. E. by N. when regular, and the flood in the opposite direction; but I have sometimes observed the tide to set all round the compass during the night, and once N. N. W. 2 miles an hour, directly over the reef. About the northern patches of the reef, the tides have also been found at times very irregular, setting East and West, and all round the compass; but their general direction in that part, is nearly North and South, or within 2 points of the meridian. In the South Channel, betwixt Pedro Branco and Bintang, the flood sets about W. S. W. and W. by S., and the ebb in the opposite direction along the Bintang shore, but subject to irregularities.

On full and change of the moon, it is high water at Pedro Branco about 11 hours, when any regularity is preserved by the tides. The velocity of the ebb when strongest, is from 4 to 4½ miles an hour, in the entrance of the strait, and between Point Romania and Pedro Branco; but the flood is not so strong. The velocity of the tides during the neaps, is from 2 to 3 miles an hour, frequently very irregular.

North Channel.

NORTH CHANNEL, formed between Pedro Branco and Romania Reef, has been hitherto in general use; but it is not so wide, nor so safe to adopt in the night, for running out of the strait, as the South Channel along the Bintang shore. Having passed Johore Shoal, about mid-strait, and intending to proceed out of the strait through the North Channel, steer for Pedro Branco, if day-light. Should the wind hang at southward, keep well out from the Romania Shore, and endeavour to make Pedro Branco bearing E. N. E. or E. by N., that you may be enabled to borrow toward it with the ebb tide, to give a proper birth to the edge of Romania Reef, in steering out of the strait: and do not approach the reef under 16 or 17 fathoms when Pedro Branco bears from S. E. to South, particularly with a southerly wind. After Pedro Branco is brought to bear S. S. W., edge away to the N. Eastward, observing

Directions to sail through it into the China Sea.

to keep it to the westward of S. S. W. whilst in sight, or having brought the centre of Bintang Saddle Hill to bear South, *if visible*, steer to the northward along the edge of the reef, keeping *that* bearing. The summit of the False, or Little Hill, will *then* be open with the western shoulder of the Large Saddle Hill, which will carry you to the northward between the shoal patch of the eastern bank and the northern patch of the reef, in soundings from 16 to 13 fathoms. The centre of Bintang Hill must not be brought to the eastward of South in passing the N. Eastern part of the reef; for if it bear S. 3° E., you will get upon the north-easternmost patch of the reef, where there are overfalls of hard ground from 6 or 7, to 4½ fathoms.

With a fair wind, or if night is approaching, after passing Pedro Branco, or thick weather coming on, do not round the reef close, but continue to steer about 3 leagues to the N. East, before a direct course is pursued for Pulo Aor.

If not so far advanced as to discern Pedro Branco before dark, haul in toward the land, a little to the West of Point Romania, and anchor in from 10 to 18 fathoms, during the *night*; for it is *then* dangerous to run out betwixt the reef and Pedro Branco, unless the weather is settled and clear, the breeze favorable and commanding, and the velocity and direction of the tide known at the time; because, the soundings to the westward of Pedro Branco, are irregular in some places, and not a certain guide.

If, however, you are resolved to run out during a clear night, (which may sometimes be done by those well acquainted with the channel) pass Point Romania about 4 or 5 miles distance, in soundings of 18 to 22 fathoms, and endeavour to preserve these depths in rounding the reef, borrowing a little on either side of the channel, as the prevailing wind or tide may render advisable. When abreast of Pedro Branco, from 18 to 22 fathoms are good soundings with a fair wind, and you will then be much nearer to the reef, than to the former. Be careful on the ebb tide, even with a commanding breeze, not on any account to shoal under 17 or 18 fathoms, until Pedro Branco is passed, and bearing to the westward of South; for with a strong ebb tide, you may be drifted on the edge of the reef without warning, as the distance from 20 to 12 fathoms is very little, and there are 12 fathoms close to some of the dangerous patches. After passing Pedro Branco, continue to steer 2 or 3 leagues to the eastward, to make certain of being clear of the outer patches of Romania Reef, then a direct course to the northward may be pursued, toward Pulo Aor.

South Channel.

SOUTH CHANNEL, formed betwixt Pedro Branco and the Bintang shore, being wider than the North Channel, is preferable for sailing through in the night, although until recently, it was *little* known.* The depths in the South Channel are 7, 8, and 9 fathoms near the shore of Bintang, from 10 to 12 fathoms in mid-channel, and 15 or 16 fathoms near the ledges of rocks to the S. E. and S. Westward of Pedro Branco. The depths in this channel, are greater to the westward of the meridian of Pedro Branco, than upon, or to the eastward of its meridian, which ought to be kept in remembrance, when passing through it in the night.

In proceeding out of Sincapour Strait, if not so far advanced as to discern Pedro Branco before the evening, steer for the South Channel, by hauling toward the N. W. point of Bintang, if the wind is southerly, observing to give a birth to the small island which lies about 1½ mile off that shore. After passing this small island in 14 or 15 fathoms, keep within 3 miles of the Bintang shore, particularly when abreast of the ledges of rocks to the S. W. and S. Eastward of Pedro Branco; these bound the channel on the North side, which is about 6

To sail out by it.

* The Rooke frigate went through the channel betwixt Pedro Branco and Bintang in 1700. Afterward, it seems to have been obscured from the knowledge of Europeans for a great length of time; for English navigators knew of no safe passage, until Captain J. Elmore, in the ship Gratitude, went through in 1784. It is now much frequented, particularly by ships going out, or entering the strait in the night, and is found to be an excellent channel, affording good anchorage, with moderate depths of water.

miles wide betwixt them and the shore. There are 16 and 17 fathoms very near the S. W. rocks, and when abreast of them, 10 to 12 fathoms is a safe track; but the *most certain* guide is, to take the soundings from the Bintang shore, hauling in occasionally to 8 fathoms, and edging out to 10 and 11 fathoms. The bottom in 8 fathoms contiguous to the shore, is sometimes hard sand, but the depths decrease regularly; out in 10 and 11 fathoms, about mid-channel, the bottom is clay in some parts, or sand and gravel mixed with clay. You may stand toward the Bintang shore to 8 fathoms in working, or to 7 fathoms in some places, and out to 13 or 14 fathoms; but in the night, do not deepen to more than 13 fathoms, when abreast of the ledges of rocks adjacent to Pedro Branco. About S. by E. $\frac{3}{4}$ E. from Pedro Branco, Capt. Cowman had $5\frac{1}{2}$ fathoms on a bank about $2\frac{1}{2}$ miles from Bintang, with 7 and 8 fathoms close round it, when passing out of the strait of Rhio by the South Channel in the night.

When proceeding out in the night, if the summit of Bintang Hill is visible over the low land, it may be brought to bear S. by W., you may *then* edge off to the northward, if certain that the ebb tide is running out of the strait. But if the wind is unsteady, and the direction of the tide unknown, continue to steer N. Eastward for some time, until well outside of Pedro Branco and Romania Reef, to prevent the flood from drifting you near either of these dangers.

You may anchor in the South Channel conveniently day or night, the depths in mid-channel being generally 11 or 12 fathoms, and near the Bintang shore, 8 and 9 fathoms sand, or sand and clay.

or by Rhio Strait when the N. E. monsoon blows strong.

Ships bound from Sincapour to the coast of Borneo, or intending to proceed by the Eastern Passage toward China, are frequently several days working out of Sincapour Strait, when the N. E. monsoon blows strong into it at times, in part of November, December, and January. It may, therefore, be advisable, for a ship after reaching the entrance of Rhio Strait, and finding the weather dark and cloudy, with a strong gale blowing from the N. Eastward, not to lose time working out to the eastward with the ebb tide, and anchoring on the flood; for in such case, she may save considerable fatigue to the crew, wear of ground tackle, and probably some time, by proceeding to the S. Eastward through Rhio Strait. Here, she will have smooth water and favorable breezes, and when through it, she may haul to the S. Eastward between the Dogger Banks and Lingin, then steer eastward for the Carimata Passage, as the wind generally draws to the northward when the equator is approached. In the Section marked, "Sailing Directions from Banca Strait to Pulo Aor," remarks are given for sailing through the Strait of Rhio.

## *DIRECTIONS to ENTER SINCAPOUR STRAIT, and to RETURN BY IT, and MALACCA STRAIT.*

To sail from Pulo Aor, to Sincapour Strait;

DURING the strength of the N. E. monsoon, the current sets generally to the South or S. S. E., between Pulo Aor and the East end of Bintang, by which, ships running for Sincapour Strait, are liable to fall to the southward of its entrance in thick weather, if proper allowance be not made. If at anchor under Pulo Aor, you ought not to weigh until past midnight, particularly with a fresh breeze, that the approach be not too close to the entrance of the strait before day-light; and the same rule may be observed if you heave to, near the island in the evening, to let some hours pass over prior to bearing away for the strait.

In clear,

Departing from Pulo Aor, steer to bring it bearing about North, when disappearing: if

the weather is clear, Bintang Hill and Pulo Aor may be seen together, but this seldom happens. Do not bring the centre of Bintang Saddle Hill to the eastward of South, until Pedro Branco is visible from the deck; for with the hill bearing South, you will not pass far outside of the N. Easternmost patch of Romania Reef; but it is a safe bearing if the compass be true, and will lead down in soundings of 16 to 13 fathoms.

In hazy weather, Bintang Hill is seldom visible until you have passed the eastern part of the reef; in such case, having Pulo Aor disappearing about North, a course S. by W. to S. S. W. may be requisite to counteract the S. Easterly currents, or the ebb tide setting out of the strait to N. Eastward. The depths will decrease regularly in steering southward, and the low land will *probably* be seen to the westward, when in 20 or 18 fathoms: coast it along at $3\frac{1}{2}$ or 4 leagues distance, until False Barbucit *low sloping* hill is discerned, appearing a little way from the sea, like a clump of trees more elevated than the others. When this hill bears W. S. W., 15 fathoms is the fair track; with it bearing W. $\frac{3}{4}$ S. and W. $\frac{1}{2}$ S., overfalls from 16 to 13 fathoms may be experienced, or probably less water, being then about the parallel of the N. Easternmost patch of Romania Reef, and the shoal patch with 8 to 10 fathoms, on the Eastern Bank. or in hazy weather.

Having coasted along at $3\frac{1}{2}$ to 4 leagues distance, with the land plain in sight from the deck, and having brought False Barbucit Hill to bear about W. by S., you are approaching the N. Easternmost patch of the reef: and with this hill bearing about W. $\frac{3}{4}$ S., if a cast of 10, 9, or 8 fathoms is got, but uncertain whether these soundings are on the N. Eastern extremity of the reef, or on the shoal patch of the Eastern Bank, haul to the S. Eastward until in 14 or 15 fathoms. Steer then South about 2 miles, or until False Barbucit Hill bears West, which will place you to the southward of the shoal patch of the Eastern Bank, and abreast of the N. Eastern extremity of Romania Reef; you may then haul in to the W. S. Westward, and get a cast of 10 or 11 fathoms, and will then be certain that these soundings are on the edge of the reef; but in doing so, heave the lead quick, and if there is less than 10 fathoms, haul out directly eastward into 15 or 16 fathoms, and then steer along the S. Eastern edge of the reef in 16 or 17 fathoms. If when Pedro Branco is discerned, it bear S. S. W., you are clear to the eastward of the reef; but if it is seen bearing S. by W., you will be close to, or upon the edge of shoal water. Having steered round the reef, so far as to bring Pedro Branco to bear S. by W., do not come under 16 or 17 fathoms in passing along the southern part of the reef; for it is steep from 16 to 12, and from 12 to 3 fathoms at a cast, on some of the shoal rocky patches with Pedro Branco bearing from S. E. to South. Having passed betwixt Pedro Branco and the edge of Romania Reef, in any depth from 17 to 32 fathoms, as the tide and the prevailing wind render expedient, steer to the W. S. Westward nearly in mid-strait, to give a birth to Johore Shoal. Although Pedro Branco is steep to, on the North side, it should not be approached very close, for navigators are liable to estimate their distance from it sometimes greater than the truth; and as the tides run strong, ships are in danger of being drifted quickly toward it without warning, if they borrow near it in light breezes.* To enter Sincapour Strait by the North Channel.

SOUTH CHANNEL, is very convenient for ships which fall to leeward of Pedro Branco during thick weather, as they have no occasion to anchor outside. If the wind is N. Easterly, they may run down until within 4 or 5 miles of the Bintang shore, then haul to the westward, and pass nearly in mid-channel between it and Pedro Branco, in 11 to 13 fathoms water. With the wind at N. W. or North, it is advisable to borrow toward the Rocky Ledges to the S. E. and S. Westward of Pedro Branco, and endeavour to pass rather nearer To enter it by the South Channel.

* The Shah Munchah, a large and valuable ship, from China bound to Bombay, standing into the strait at mid-day, with a strong flood tide and scant wind, stood too near Pedro Branco before tacking, and was totally lost, by the tide horsing her upon the rock whilst in stays.

to it than to the Bintang shore, observing not to approach too close to the S. W. rocks, as they are covered at half tide. By borrowing toward the weather side of the channel, ships will be enabled to reach well into the entrance of the strait, and if the wind is scant and the tide setting out against them, they will have smooth water and good bottom for anchorage, until the tide of flood is favorable for proceeding to the westward.

Some ships have been set to the southward of the entrance of the strait, by the current, and having mistaken the high land on the West end of Pulo Panjang, for Barbucit Hill, and one of the rocky islets, for Pedro Branco, they were obliged to proceed round Bintang, and entered the strait of Sincapour by Rhio Strait; others have passed to the westward, through the straits of Durian. Ships which happen to fall to leeward of the entrance of Sincapour Strait, ought not to go between Bintang and Panjang, that passage being interspersed with many islets and rocky shoals, rendering it unsafe for large ships, if boats are not kept a-head to sound. But in such case, it is advisable to pass outside of Panjang, then steer to the S. Westward betwixt the S. E. end of Bintang and the adjoining islands, with a boat sounding a-head, as there are some reefs and sand banks, covered at high water. The easternmost island off Pulo Panjang, is in lat. 0° 54′ N., lon. 104° 56½′ E., and another island bearing from the former S. 39° W., lies in lat. 0° 48′ N. Monkey Island, fronting the South coast of Bintang, is of considerable extent; after passing between it and Low Island, which lies to the eastward, ships intending to touch at Rhio should haul to the N. W. for that strait; otherwise, they may steer to the westward between the islands, to proceed through the straits of Durian, and enter into Malacca Strait at the Carimons. Persons unacquainted, ought in passing amongst these islands, not to neglect to keep a boat sounding a-head, to examine the channels.

Directions for ships which fall to leeward.

Geo. site of Pulo Panjang easternmost island.

Directions for sailing to the westward through Sincapour Strait.

HAVING ENTERED THE STRAIT OF SINCAPOUR, by either channel, steer to the westward in mid-strait, or at any discretional distance from the North shore, until Johore Shoal, the first danger is approached: keep then about mid-strait in passing it, and do not borrow nearer it than 18 or 17 fathoms, as the water shoals suddenly under 16 or 17 fathoms; the island St. John's kept W. by S., is a fair bearing, in steering to the westward. When the East end of Sincapour Island, or the Red Cliffs, bears about N. by W., you are clear to the westward of the shoal; the northern shore is then safe to approach as far as St. John's, but the South side of the strait, being rocky and dangerous, must be avoided.

If the wind and tide be unfavorable, or the weather very dark in the night, you may anchor in 14 to 18 fathoms, toward the North Shore, or under the East side of St. John's; otherwise, pass the South point of this island as close as the wind may render proper, and steer W. S. W. and W. by S. to round the Rabbit and Coney. It is best to keep nearest the North side of the channel in this track, to avoid the Buffalo Rock, and the deep water and rocky bottom toward the South Shore, but care must be taken to give a birth to the reef off the S. E. end of Middle Island. The South end of St. John's kept E. N. E. ½ N., leads clear of that reef, or the South end of Barn Island W. by S. ½ S.; and either of these are safe bearings, to carry you along in the North side of the channel until the Coney is approached, which may be rounded at the distance of 2 or 3 cable's lengths, if the wind is northerly.

From thence to

When round the CONEY and South point of Barn Island, steer W. N. W. to pass betwixt Tree Island and the Sultan's Shoal, and from thence between Tanjong Boulus and the Little Carimon. The South end of Barn Island kept E. by S., will carry you about mid-channel; with it E. ½ S., you will near Tree Island; and if E. S. E., you will approach the Sultan's Shoal. After passing Tree Island, steer about W. N. W., hauling up a little either way as the wind or tide may require, to pass rather nearer than mid-channel toward Tanjong Boulus, which ought to have a birth of 2 miles, on account of the shoal mud bank that encircles it, and is steep from 16 fathoms.

From abreast of Pulo Cocob entrance, steer about N. W. for Pulo Pisang, observing not

to approach Pulo Cocob, or the mud bank that stretches along the coast between it and Pulo Pisang, under 11 or 12 fathoms; nor bring the outer part of the latter island to the westward of N. W. With a fair wind, keep in 17 to 19 fathoms about mid-channel, and do not borrow under 13 fathoms on either side, when working in the night.

Pulo Pisang, When Pulo Pisang is approached, pass outside of it at 3 or 4 miles distance if the wind is favorable, then steer about N. W. by W., which is a fair channel course to clear Formosa Bank; or if Pulo Pisang is kept about E. S. E., it is a proper bearing throughout the channel. In working, you may stand into 10 or 12 fathoms on the edge of the Shore Bank, and off 2 or 2½ leagues to 18 or 20 fathoms; the soundings on the Fair Channel Bank, will be a guide in crossing over it on each tack.

to Formosa Bank; the Water Islands, From abreast of the bank off Formosa River, at 3 or 4 miles distance, steer N. W. by W. for the Water Islands; borrowing toward the Malay Coast occasionally to 12 or 13 fathoms, there being no danger in this part of the strait from side to side. After rounding the Outer Water Island, at any distance thought proper, if you do not intend to touch at Malacca, steer about N. W. and N. W. by W. for Cape Rachado, in soundings from 20 to 16 fathoms, keeping within 6 or 7 miles of the Malay Coast; but it must not be approached nearer than 3 miles, in passing the rocky shore between Tanjong Clin and Cape Rachado. This cape may be passed within 1 or 2 miles, and from thence, steer N. W. by W. for Parcelar Point, observing not to bring Cape Rachado to the southward of S. 60° E. in standing toward the shoals in the bight, nor to the eastward of E. by S. ½ S. in passing the eastern patches of the South Sand, when the Cape appears like an island. The soundings are irregular, but generally from 25 to 27 fathoms about mid-channel, 17 and 18 fathoms near the shoals in the bight, and 35 to 44 fathoms near the dangerous patches of the South Sand. Cape Rachado kept about E. S. E., is a fair bearing in passing through the channel toward Parcelar Point, and when this point is approached, it may be passed at 3, 4, or 5 miles distance; but the coast forming the bight between it and Cape Rachado, must not be approached nearer than 5 miles, on account of the shoals which stretch along its northern and middle parts.

Cape Rachado,

and to Parcelar Point. From Parcelar Point, steer about N. W. ½ W., keeping 3 or 4 miles off shore, to avoid the shoal bank that lines the coast abreast of Parcelar Hill, and do not borrow on the edge of it under 17 or 18 fathoms, for it is very steep under these depths. In working, you may stand about 3 leagues from the land, into 24 or 25 fathoms, and will probably shoal to 13 or 14 fathoms in crossing the narrow bank in the fair channel.

To sail from the land of Parcelar, through the East and West channel, HAVING brought PARCELAR HILL to bear about E. by N. ½ N., you may with a southerly wind and ebb tide, edge away for the East and West channel, betwixt the North and South Sands, gradually drawing Parcelar Hill to bear about E. ½ N., by the time the low land of Callam is nearly disappearing from the deck. If the hill is clouded, keep the body of Pulo Callam, or that part of land to the westward of the strait, bearing about E. N. E. ½ N., which will carry you well clear of the 2½-Fathoms Bank; and when the low land disappears from the deck, you have passed it, and may steer along the edge of the North Sand about W. by N., altering the course as the wind or tides require, to keep from 14 to 16 or 17 fathoms. When clear to the westward of the 2½-Fathoms Bank, Parcelar Hill may be brought to the southward of East, in steering along the edge of the North Sand; and those who are a little acquainted, may pass through this part of the channel in the night, if the weather is clear and the set of the tide known, by taking the soundings from the edge of the North Sand, and hauling off occasionally when the depths decrease under 12 or 13 fathoms. With a southerly wind, keep about mid-channel, but care must be taken in the night not to approach the rocks off the Round Arroa; for if the Arroa is discerned with the glass or otherwise, haul immediately to the northward, to give a birth to these rocks, and you will deepen to 35 or 44 fathoms to the N. Eastward of the Long Arroa. From this situation, or from the western extremity of the North Sand, steer about North to make the Sambilangs, and

from thence to the Sambilangs,

do not approach these islands under 25 or 26 fathoms when passing between them and Pulo Jarra in a dark night, on account of the rocks that lie to the westward of them; about 28 to 30 fathoms are good depths to preserve, in passing through this channel during the night.

to Prince of Wales' Island,

FROM the SAMBILANGS, steer to the N. N. Westward for Prince of Wales' Island, giving a birth of 4 or 5 miles to Pulo Dinding in passing, to avoid the mud bank in the offing; and afterward, keep along the coast of Perah in soundings of 16 to 20 fathoms, about $3\frac{1}{2}$ to 4 leagues off. In working, do not stand out farther than 25 fathoms, and tack from the edge of the shore bank in 10 or 11 fathoms; for the water shoals suddenly under these depths, rendering it necessary to keep the lead going quickly, when near the edge of the bank. In the N. E. monsoon, ships bound to Prince of Wales' Island, Bengal, or Madras, ought to be particularly careful, to keep near the Malay side of the strait after passing Pulo Dinding; for strong N. E. winds, with a short sea, sometimes prevail in mid-strait, betwixt Diamond Point and Prince of Wales' Island, making it difficult for ships which are in the offing, to regain the Eastern Shore. Large ships bound into Prince of Wales' Island, ought not to attempt to pass through the South Channel, unless there is a good pilot on board; but they should coast round the island, and proceed into the harbour by the North channel.

and out of Malacca Strait.

DEPARTING from, or having passed PRINCE OF WALES' ISLAND, whether bound to Bengal, or to the coast of Coromandel, steer to pass outside of the Ladda Islands, Pulo Bouton, and Junkseylon Head, at a moderate distance: if bound to Ceylon, the Malabar coast, or other parts to the westward or southward, steer for the channel between Pulo Rondo and the South Nicobar, conforming to the directions already given for sailing *to* or *from* Malacca Strait, in both monsoons; which will be found in this Second Volume, under the title, "Navigation of Malacca Strait," section 1st, and under the title "West Coast of Sumatra" section 1st; also, in the last sections of Volume First, farther directions will be found for sailing into, and out of the strait, and between it and the different coasts of India, during either monsoon.

# *CHINA SEA.*

## MONSOONS, WINDS, TY-FOONGS, AND CURRENTS.

S. W. monsoon in the China Sea.

S. W. MONSOON, generally commences in the China Sea, about the middle, or end of April, and continues to the beginning, or middle of October, liable to an acceleration or retardation of 12 or 15 days in one season from another; it sets in, rather sooner about the gulfs of Siam and Tonking, and along the western coasts, than over to the eastward in the open sea, near the coast of China, or near the coasts of Palawan and Luconia. It also continues longer, to the southward of Cape Padaran and Pulo Sapata, and along the coast of Palawan, in the southern part of the China Sea, than it does more to the northward; for southerly winds frequently prevail between Sincapour Strait and Pulo Sapata, until the 8th, 10th, or 15th of October, when N. E. and easterly winds are blowing in the northern part of that sea. In September and great part of October, the winds off the North extremity of Borneo, and the West end of Palawan, generally blow strong from S. Westward, with dark cloudy weather and much rain.

In May, the winds are often light and variable in the open sea, and easterly or S. E. winds are liable to happen for a day or two at a time, during the whole of the S. W. monsoon;

particularly in the northern part of the China Sea, where these winds frequently predominate in both monsoons. About Formosa, and betwixt it and the China Coast, N. Easterly winds often prevail in July, August, and September.

The S. W. monsoon is strongest, and least liable to changes, in June, July, and August; in these months, and also in May, sudden hard squalls blow sometimes out of the Gulf of Siam, as far as Pulo Condore, and Pulo Sapata. When dense clouds are perceived to rise, indicating the approach of these squalls, sail ought to be reduced without delay.

From the Gulf of Siam to Cape Padaran, the S. W. monsoon blows along the coast nearly parallel to it; and if close in, a faint breeze from the land is at times experienced in the night, which is succeeded by a short interval of calm on the following morning, occasioned by the influence of the sun. The monsoon breeze then sets in, and generally continues brisk during the day. These land and sea breezes, prevail with most regularity on the coast of Cochin-china, from Cape Padaran northward to the Tonking Gulf; for the sea wind dies away almost every evening on this coast, during the S. W. monsoon, and a land breeze comes off in the night, although not at a regular hour. This is followed by calms or faint airs, which frequently continue until noon; then the sea breeze sets in from S. Eastward.

In March and April, there are land and sea breezes on the coast of Luconia, with fine weather; but after the S. W. monsoon sets in strong in June, and from that time until it abates in October, the weather is mostly cloudy; and the winds blowing from the sea upon that coast, generally produce much rain. In June, July, and part of August, there is at times, much rain, and cloudy weather, all over the China Sea. On the South coast of China, the winds during the S. W. monsoon, prevail frequently at South, and S. S. Eastward.

N. E. MONSOON, frequently commences in the northern part of the China Sea, about the end of September, or early in October; but in the southern part of this sea, it seldom sets in steady until November; for here, light southerly, or variable breezes, prevail through most part of October. The weather in some years, is settled and fine, during the months of September and October; for the N. E. monsoon, does not *always* set in with a storm; but the equinox is a very precarious period, for within a few days of it, storms are liable to happen,* and also with the setting in of the monsoon, in October. N. E. monsoon.

In November, the N. E. monsoon generally prevails; but it blows more steady, and with greatest strength, in December and January. The weather is frequently cloudy, with much rain, and a pretty large sea in these months; particularly about Pulo Sapata, and from thence to the entrance of Sincapour Strait: there are also considerable intervals of fine weather. On the coast of Palawan, the winds are very variable in October, November, and the early part of December; by which, ships may pass along that coast either to the N. E. or S. Westward, at these times, but the weather is often very dark and cloudy. The winds on the coast of Luconia, are frequently variable during the N. E. monsoon, generally from the North and N. Eastward; but they veer to N. W. and Westward at times, and then blow strong, with cloudy weather and rain. In the Gulf of Tonking, there are sometimes faint land breezes close to the coast in November; but the N. E. monsoon prevails along the coast of Cochin-china, as far to the southward as Cape Padaran, generally from September or the early part of October, to the beginning or middle of April.

* On the 22d of September, 1786, near the Grand Ladrone, the Gunjavar encountered a storm which continued several days, disabled, and obliged her to take shelter in Galong Bay at the South end of Hainan, where she remained 6 months. The Warley on the 22d of September 1803, off St. John's had a tempest, that drove her to the Taya Islands, blew away her topmasts and did other damage. The Bombay late in September 1789, had a tempest close to St. John's, which obliged her to cut away her mainmast, and run on shore.

During these last 7 years, several of H. M. ships, and those belonging to the company, have been dismasted by these equinoctial Ty-foongs, which generally happen within 8 or 10 days of the equinox; and in these tempests, the Ocean, True Briton, and other ships, have foundered with all their crews.

In February the strength of the N. E. monsoon abates; during this month and March, it blows moderately, with steady weather all over the China sea; and inclines to land and sea breezes on the coast of Luconia. On the South coast of China, when the N. E. monsoon prevails, the winds blow mostly from E. N. E., parallel to the shore; they veer, and blow off the land at times, and also from the S. Eastward, but there are seldom any regular land or sea breezes on that coast.

Ty-foongs. TY-FOONG'S,* are dangerous tempests, liable to happen in the northern part of the China sea, along the southern and eastern coasts of China, near Formosa, the Bashee Islands, the North end of Luconia; also to the eastward of those islands, and betwixt Formosa and the Japan Archipelago. These tempests blow with greatest fury near land: as the distance is increased to the southward of the coast of China, their violence abates proportionally, seldom reaching beyond lat. 16° N.

They have been experienced in both monsoons; but in May, November, or December, are not felt severe in the China Sea, *if they happen* in these months; although in the vicinity of Formosa and the Bashee Islands, there are furious gusts sometimes in November. From December to May, Ty-foongs seldom or never happen; of late years, those which have been experienced in June and July, were the most violent; many ships have been dismasted, and sustained other damage by them. The months of August, September, and October, are also subject to these tempests; about the equinox in September, is a very precarious period, particularly if the change, or perigee of the moon, happen at the same time: when this was the case, Ty-foongs happened several years at the equinox in September, on the coast of China, and many ships have been dismasted on the 21st or 22d of September.

To prognosticate the approach of these tempests, would be very useful to navigators, but this cannot be done with certainty, for they frequently commence without giving much indication of their approach. The clouds having a red aspect, is not a certain warning of the approach of a Ty-foong; for at the rising, but more particularly at the setting of the sun, the clouds in settled weather, are sometimes tinged with a deep red colour by the reflected light, especially those opposite to the luminary. A hazy atmosphere, preventing land from being seen at great distances, is no unfavorable sign on the coast of China; for this is generally its state, in *medium*, or *settled* weather. Neither is an irregular swell, a good criterion to judge of the approach of a Ty-foong; for near the coast of China, a cross swell frequently prevails during steady settled weather. A serene sky, with the horizon remarkably clear, should not be considered an indication of a continuance of favorable weather; for a series of fine weather and calms, favoring an increase of heat above the mean temperature, is liable to be succeeded by a Ty-foong. When the horizon is very clear in some parts, and the summits of the hills or islands obscured in dense black clouds, there is some irregularity in the atmosphere, and stormy weather may be apprehended; but in reality, Ty-foongs are seldom preceded by any certain sign or indication. Marine Barometers, if well constructed, seem to afford the best means to anticipate these tempests; for the mercury is sometimes liable to a greater fall on the South coast of China, than might be expected within the tropics.†

* i. e. Great Winds: in the Chinese language, Ty, is *great* or *mighty*, and Foong, signifies *wind*.

† Proceeding across the Gulf of Tonking by the inner passage to China, on the 21st of July, 1804, in lat. 18° N., the mercury fell in a marine barometer made by Troughton, from 29, 65, to 29, 05, previously to, and during a hard gale at N. Westward, out of the gulf, which is a great fall for that latitude.

In lat. 19° N., lon. 115° E., on the 28th of September, 1809, the Neptune's barometer fell from 29, 85, to 28, 30 prior to, and during a Ty-foong, in which the True Briton, of 1200 tons burthen, perished with all her crew.

In lat. 17° N., lon. 115½° E., on the 28th of September, 1810, the Elphinston's barometer fell from 29, 85, to 29, 3, before, and during a Ty-foong, which laid her on her beam-ends, and they were obliged to cut away the mizen-mast, and main mast, to save her. In lat. 16½° N., lon. 116° E., on the 9th of September, 1812, the Elphinston's barometer fell considerably, by which Capt. Craig prepared for a Ty-foong, which soon followed, and dismasted H. M. ship Theban, and the Cirencester, but the Elphinstone sustained no injury; and further, Capt.

Many ships have been driven from the Grand Ladrone to the Mandarin's Cap, and even to the Taya Islands near Hainan, during Ty-foongs; for among the islands and near the coast, these tempests generally commence between N. W. and North, then veer suddenly to N. E. and eastward, frequently blowing with inconceivable fury, and rising the sea in turbulent pyramids, which impinge violently against each other; and the current then runs strong to the westward. From eastward, the wind veers to S. E. and southward, and then becomes moderate. This rotatory motion of the wind during Ty-foongs, is generally experienced contiguous to, and within a moderate distance of the coast of China; but about 2° or 3° from the coast, a contrary motion takes place. Here, as before, Ty-foongs generally commence at northward, but instead of veering to N. E. and eastward, as in the former case, the wind veers to N. W. and westward, blowing then very severe, and afterward changes to S. W. and southward, where it gradually abates in violence.

During some years, no Ty-foong happens on the South coast of China; at other times, 2 or 3 of these tempests have been experienced in 1 year; but fortunately, their fury is seldom of long continuance.

Gales of wind.

GALES OF WIND, sometimes blow steady from E. N. E. or N. Eastward, several days at a time, in September or October, near the coast of China. In the same months, gales are liable to happen on the West coast of Luconia. Here, they mostly commence at North or N. W., and veer to West, S. W. or Southward, blowing strong from all these directions, with heavy falls of rain, and a cross turbulent sea; but they seldom continue long.

Strong N. E. gales have been sometimes experienced on the coast of China, during the S. W. monsoon; in 1 of these, the Ceres after making the Grand Ladrone on the 16th of July, 1802, was driven westward to the Mandarin's Cap, by the 20th, with strong gales, hard squalls, and the current setting from 1 to 2 miles per hour to the westward. The N. Easterly wind continued 9 days, which obliged her to stand out to sea, and she did not arrive until the 26th, at Macoa.*

In May, June, July, and August, severe gales of wind are at times experienced in the N. Western part of the China Sea, particularly betwixt lat. 14° N. and the island Hainan, with the gulf of Tonking open. These gales generally begin at N. N. W. or N. W. and blow with violence out of the gulf, accompanied by dark weather and a deluge of rain: from N. W. they veer to West and S. W. still blowing strong; and abate as they veer more southerly. When these N. W. gales are blowing in the vicinity of the island Hainan and the coast of Cochin-China, strong S. W. or southerly gales, generally prevail at the same time, out in the middle of the China Sea.

Currents in the China Sea during the S. W. monsoon;

CURRENTS, in the China sea, are very mutable, their direction and velocity depending much upon local circumstances. Late in April or early in May, they *generally* begin to set to the northward, in the South and middle parts of the China sea, and continue to set N. Easterly until September, while the S. W. monsoon is strong; but they are not constant in this monsoon, for at times when the wind is moderate or light, the currents are liable to change and set in various directions. After the strength of the monsoon has abated, there is often little or no current in the open sea, setting to the N. Eastward; and sometimes, it sets to the southward.

Along the coast of Cambodia, from Pulo Oby to Cape Padaran, the current sets mostly to the E. N. Eastward, parallel to the shores, from April to the middle of October; and during the same period, it sets *generally* to the northward along the East coast of Malay, from the entrance of Sincapour Strait to the Gulf of Siam. To the northward of Cape

* Krusenstern, the Russian circumnavigator, informed me, that the mercury fell below the *graduated scale* of 27 inches, in his marine barometer, during the progress of a Ty-foong, when near the Japan Islands.

Padaran, there is very little current in the S. W. monsoon, near the coast of Cochin-China; for from thence to the Gulf of Tonking, a small drain is sometimes found setting to the northward, at other times to the southward. When a gale happens to blow out of the Gulf of Tonking from N. W. and Westward, the current at the same time sets generally to the S. W. or Southward, in the vicinity of the Paracels, or where these gales are experienced; and this current running oblique, or contrary to the wind, a very turbulent and high sea, is thereby produced.

On the South coast of China, the current is much governed by the wind: when strong S. W. winds prevail, it runs along shore to the eastward, seldom strong. Near, and amongst the islands, westward of Macao, there is generally a westerly current, occasioned by the freshes from Canton River, which set in that direction; frequently sweeping along the islands from Macao to St. John's between W. S. W. and W. N. W., about 1 to 2 miles per hour. This westerly current is, however, not always constant in the S. W. monsoon, for it slacks at times; then a weak tide, may *sometimes* be experienced to set to the eastward.

On the coasts of Luconia, and Palawan, the current *generally* sets northward in the S. W. monsoon, but frequently there is none, and near these coasts, it *seldom* runs very strong. Near the Bashee Islands, it sometimes sets to the eastward when strong westerly winds prevail; but generally strong to the northward, or between N. N. W. and N. E.

and in the N. E. monsoon.

DURING the N. E. MONSOON, the current in the China sea, *generally* runs to the S. Westward before the wind, with a velocity proportionate to its strength; for when strong gales blow in the early part of this monsoon, an augmentation of the S. Westerly current is produced. When the force of the monsoon is abated, or during moderate and light breezes, there is often little or no current.

In the western parts of the China sea, along the coasts of Cochin-China and Malay, the current in general, begins to run to the southward about the middle of October, sometimes sooner on the former coast, and continues until April. During the month of March, the current runs constantly to the southward about Pulo Aor, with light easterly breezes, and calms at times. On the coast of Cochin-China, and adjacent to the Island Hainan, southerly or S. W. currents commence sometimes about the middle of September; and from lat. 15° N. they increase in strength near the land, to lat. 11° N. or 11½° N., then decrease farther to the southward. During the prevalence of the N. E. monsoon, from about lat. 14° N. to Cape Padaran, the current frequently runs at the rate of 40 or 50, and sometimes 60 miles to the southward in 24 hours, along the coast. This southerly current is not always so strong, and it is confined to the limits mentioned; for it abates at Cape Padaran, and runs with less velocity to the S. W., toward the entrance of the Gulf of Siam.

On the South coast of China, the current during the N. E. monsoon, runs almost constantly to the W. S. Westward, parallel to the land; and sometimes with inconceivable rapidity, when a Ty-foong, or a storm happens. At the distance of 20 or 30 leagues from the coast, the current seldom runs so strong as near it; and out in 30 or 40 fathoms water, there is much less current than in shoal water, near the shore, and amongst the islands. The Westerly current sometimes slacks, and contiguous to the land, is succeeded by a kind of tides.

Betwixt the Island Formosa and the China coast, the current runs to the southward during the N. E. monsoon, and generally to the S. W. or Southward, between the South end of Formosa and the North end of Luconia, when strong N. E. winds prevail; but here, in light variable winds, it often sets to the northward. On the West coast of Luconia, it is changeable, sometimes setting southward along the coast, at other times to the northward. On the coast of Palawan, the current is also mutable, governed by the prevailing winds, but seldom runs strong in any direction, unless propelled by strong gales. To the eastward of Formosa, about Botel Tobago Xima, the current frequently runs strong to the northward

and N. Eastward, so early as the 1st of March; and although changeable at times, it sets mostly in that direction during the S. W. monsoon; and in the opposite direction, during the N. E. monsoon.

## *INSTRUCTIONS for SAILING THROUGH the CHINA SEA, to, or from CANTON RIVER, at all SEASONS.*

SHIPS BOUND to CHINA, which depart from Sincapour Strait, or Banca Strait, in February, March, and part of April, may expect a tedious, beating passage: in March, April, or May, they may proceed by the INNER PASSAGE, along the coast of Cochin-China, which is *generally* the most expeditious route in these months; but when June approaches, and the S. W. monsoon is set regularly in, the track by the Macclesfield Bank seems preferable, the winds being more steady in the open sea than near the coast.* Even so early as April, a ship may sometimes get a westerly breeze blowing out of the Gulf of Siam, about the full and change of the moon, to carry her to the Macclesfield Bank; and afterward, easterly winds to run her to the Grand Ladrone: but had she proceeded by the Inner Passage, easterly winds would have retarded her progress round the S. E. coast of Hainan, and from thence to the entrance of Canton River. Some ships proceeding by the Outer Passage, have carried strong S. W. and Southerly winds, when others inside of the shoals, have experienced at the same time, N. W. and Westerly storms blowing out of the Gulf of Tonking, with dark weather and much rain, and were in danger of being driven among the shoals. This happened to the Portuguese ship, St. Antonia, of Macao; she left Pulo Canton on the same day we did in the Anna, 20th of July, 1804; and on the following day, a gale commenced at N. W. out of the Gulf, which increased to a violent storm at westward, and not being able to carry sail, she was driven and lost† upon 1 of the shoals in lat. 16° 45′ N. By carrying a press of sail during the first part of the gale, we weathered the N. Western limit of the shoals in lat. 17° N. about 12 or 14 leagues; having experienced in 2 days, during the gale, a current to the S. S. W. of 50 miles. This strong southerly current, was also experienced in the St. Antonio, for when she struck, they were by reckoning, well to the northward of all the dangers.

Inner Passage to China proper, early in the S. W. monsoon; afterward, the outer passage preferable;

Although the passage to Canton by the Macclesfield Bank, seems preferable to that by the coast of Cochin-China, during the strength of the S. W. monsoon; nevertheless, if a ship be weak and crazy, or making much water, the Inner Passage ought to be chosen, for the gales which blow out of the Gulf of Tonking, are not frequent; and by adopting this passage, she may keep sight of the land, except for a few hours at a time. Departing from Sincapour Strait, or from Pulo Aor, she ought to steer along the coast to the Redang Islands, from thence across the mouth of Siam Gulf, Pulo Oby, and along the coasts of Cambodia, and Cochin-China, keeping the latter aboard to Cape Turon. From hence, it is not above ½ a day's run to the S. W. part of Hainan, and she should coast along this island to its N. E. extremity, (Hainan-Head,) passing between it and the Taya Islands, then cross over for the

A crazy ship should proceed along the coast during the whole season.

* In June, 1803, and in July, 1804, we proceeded by the inner passage in the Anna, and 2 ships went the outer passage by the Macclesfield Bank, at each of these times, having left Sincapour Strait nearly when we did. On comparing the journals of those ships with ours, it appeared, that on the same days, when nearly in the same parallels of latitude, they experienced a steady S. W. monsoon, while we on the coast of Cochin-China, had land breezes in the night, S. Easterly and variable sea breezes in the day, with intervening calms.

† The commander, and part of the crew of this ship, reached the Island Hainan upon a raft, and from thence, were conveyed by the Chinese to Canton, where I saw him, and got a narrative concerning the loss of his ship.

coast of China about Tien-Pak, or more easterly about Hai-Lin-Shan. The islands may be coasted along at discretion, from hence to Macao, or shelter may be taken amongst them, on emergency. By following this route, a crazy or leaky ship, will have smooth water; and being near land, may reach a haven, or be run on shore, if it is found impossible to keep her afloat, by which the crew will be saved. And if the boats are kept in readiness, the crew may proceed to the nearest port, or coast along to any convenient place, as circumstances require. If a ship leave Sincapour Strait before the middle of March, or the 1st of April, the passage will be tedious, unless she sail very well, and hold a good wind.

To sail through the China sea toward Canton late in the season,

OUTER PASSAGE to Canton, through the middle of the China sea, becomes precarious if a ship is not up with Pulo Sapata early in October; for about this island, strong southerly currents begin to prevail about the middle of October, with light northerly winds, variable airs and calms; by which many ships have been delayed for several days, and made no progress to the northward. This induced some of them to stretch over to the eastward, where they got entangled among the numerous shoals, and were in great danger: others have

by the outer passage;

bore away, and proceeded to China by the eastern passage. These southerly currents about Pulo Sapata, are liable to slack for a few days at a time, and this may enable a ship, with the assistance of favorable breezes, (which sometimes happen) to reach lat. 13° or 14° N., where the southerly currents are not so strong as off Cape Padaran, about Pulo Sapata, and the Catwicks. Having reached lat. 13° or 14° N., a ship may steer eastward if the wind permit, being then to the northward of the shoals, in order to secure her passage, by getting near the coast of Luconia. Should the wind hang to N. E. and E. N. E. after passing the parallel of 12° or 13° N., rendering it difficult to get to the eastward, long stretches to the northward ought to be made; and if the wind permit, a short tack may be made at times, to keep up the easting; for it would be imprudent to fall in with the coast of China, to the westward of the Grand Ladrone.

Several ships which did not reach Pulo Sapata until the middle of October, and even so late as the 1st of November, have experienced brisk southerly winds, which carried them near the coast of Luconia, from whence they got quickly to Macao; but these instances are rare, for southerly currents and light breezes, generally prevail about Pulo Sapata, during the greater part of October, and early in November.

The Royal Charlotte, Triton, and Warley, left Sincapour Strait on the 25th of October, 1793, had no southerly current till they reached Pulo Sapata on the 4th of November; afterward, they had N. W., but mostly N. Easterly breezes, and some days, a current of 10 miles to the southward. On the 23d, they saw the coast of Luconia in lat. 16° N. and on the 1st of December in lat. 19° 20′ N., had a gale between North and N. E., which drove them back to lat. 18° 30′ N., and they did not arrive at Macao until the 7th.

The Jehangire, after passing Pulo Sapata in October, 1806, had E. N. Easterly winds and westerly currents, and on the 26th she got on a coral bank with overfalls of 11, 9½, to 30 fathoms, in lat. 16° 20′ N., lon. 112° 35′ E. by chronometer, which must have been the eastern limit of the Lincoln's Shoals, but no danger was visible from the mast-head. It was calm at the time, and the current setting to S. Eastward, soon carried her off the bank; and although this ship was so far to the westward, at this late period, she nevertheless, reached Macao by the direct route.

In the Anna, we sailed from Bombay on the 26th of August, 1802, bound for China.; the Lowjee worked out of the harbour with us, and the Ardassier, sailed 3 days after, likewise bound to China. On the 14th of September we passed Pedro Branco, entered the China sea, and had light southerly winds till in lat. 12° N.; then, with variable winds mostly at E. N. E. and N. E. we proceeded to the northward by the common route, making a tack to the eastward at times to prevent falling to leeward, but were never to the eastward of lon. 115° E.: made the Lema Islands on the 30th of September, and moored at Whampoa on

the 4th of October. Having delivered our cargo of cotton, and received a full cargo for Bombay, we left Canton River on the 2d of December, and on this day passed the Ardassier bound inward, which ship had been embarrassed among the shoals to the eastward of Pulo Sapata, and afterward came through the Palawan Passage, and along the coast of Luconia. The Lowjee, went through Malacca Strait, and from thence through the Sooloo sea, into the pacific ocean, by the eastern passage to China, and she did not arrive in Canton River till about the middle of December, or 14 days after we left it in the Anna, where we had remained 2 months, although both ships left Bombay harbour together.

The 2 ships Success, and Good Success, left Malacca on the 1st of October, 1814, the former proceeded by the Palawan Passage, the latter beat up through the middle of the China sea with N. E. and E. N. E. winds, was never to the eastward of lon. 115° E., and both ships arrived in Macao Road at the same time, on the 1st of November.

PALAWAN PASSAGE, seems preferable to any other when a ship is late in the season, in order to avoid the southerly currents and light winds which may be expected about Pulo Sapata, and in the middle of the China sea, whereby, the passage in an indifferent sailing ship will be rendered precarious; or to prevent embarrassment amongst the shoals, should the dangerous track from Pulo Sapata to the eastward be followed. It is therefore, advisable, for a ship leaving Pulo Aor about, or after the middle of October, to steer for the North Anambas, and North Natuna, passing to the northward of them; and from thence eastward, through the channel betwixt the Louisa Shoal, and Royal Charlotte Shoal. When past them, an E. N. Easterly course should be steered, to give a birth to the Viper's Shoals, and a sight of the Island Balambangan may be got at the distance of 9 or 10 leagues, if the wind is southerly; but with a westerly wind, pass that island at the distance of 14 or 16 leagues, and make the Island Balabac, which may be passed at any convenient distance, about 9 or 10 leagues with a fair wind. Steer then N. N. Easterly for the channel formed by the Half Moon, Royal Captain, and Bombay Shoals in the offing, and the shoals near Palawan on the inside, which is about 10 leagues wide; and if the lead be kept going in the night, it will point out the proximity of the inner shoals, as the bank of soundings projects out from the coast of Palawan a little way beyond these shoals in most places: but from lat. 9° 15′ N. to 9° 56′ N. there is 50 fathoms water close to several of the dangers. The best track to pass through this channel, is, to keep about 9 or 10 leagues off the S. W. end of Palawan, and the same distance preserved from the land, in proceeding along that coast, will carry you in the *fair track*, clear outside of the inner shoals, and inside of those in the offing. If the wind incline easterly, pass in sight of the N. E. end of Palawan, and the Islands Calamianes, then cross over to make Luban, or Goat Island; and keep the coast of Luconia aboard, if easterly winds prevail, taking care to give a birth to the Sisters and Adders Island, which are not so close to the land as sometimes represented. With the wind at S. W. or Westward, the coast should not be approached very close, particularly in passing Cape Bolina, or in crossing the bay to the northward of it; for the current sets from the northward at times into the bay, and the Cape is encircled by rocky ground, and shoal water.

and by the Palawan Passage.

Ships which stretch off from Cape Bolina, will generally be able to pass to the eastward of the Pratas Shoal, unless a strong N. E. gale prevail, with a leeward current, which frequently happens; it is therefore, advisable, particularly in a ship that sails indifferently, to endeavour to keep in the vicinity of the coast of Luconia until abreast of Cape Bajadore, to make sure of falling in with the coast of China to the eastward of the Lema Islands.

THE PASSAGE to China by the coasts of Palawan and Luconia, may generally be accomplished without much difficulty, in October, November, and even in December; and a ship which *sails well*, may with perseverance, make a passage by this route, also in January, or at any period of the N. E. monsoon, as may be seen by the following examples.

Abstracts of Passages toward China, late in the season.

Several ships have proceeded to China by the Palawan Coast, in November and December,

The American brig Pennsylvania, passed Achen Head early in November, 1803, went through Malacca Strait, and after getting near Pulo Sapata, with N. E. winds, stood to the eastward, and got embarrassed among the shoals; notwithstanding, this vessel made her passage through the middle of the China sea in the strength of the N. E. monsoon, arriving at Macao in January, 1804.

The Lord Castlereagh, Captain Mc. Farlane, left Bombay on the 14th of September, 1804, remained 3 days at Malacca, proceeded by the Palawan Passage, and along the coast of Luconia, and arrived at Macao on the 3d of November, having been at sea 46 days, on her passage from Bombay to China. Had the Pennsylvania followed the same route, she probably would have reached China in December; and the dangerous track, through which she navigated, would have been avoided.

The Lord Walsingham, passed the Natunas on the 17th of October, 1787, carried steady S. W. winds along the coasts of Palawan and Luconia, and made the coast of China, on the 30th of the same month, in lat. 22° 44′ N.

The Eugenia, passed the Natunas on the 12th of October, 1805, proceeded by the Palawan Passage, and on the 24th made the coast of China, at Pedro Branco. The York and Royal Bishop, got sight of Balabac on the 1st of November, 1786, went by the Palawan Passage, and on the 30th arrived at Macao: the Walpole left Pulo Pisang on the West coast of Sumatra, on the 12th of October, 1783, and arrived at Macao on the 10th of December by the Palawan Passage. These ships were not coppered.

The Hammaun Shah, Captain P. D. Schmidt, from Bengal, left Sincapour Strait on the 2d of November, 1811, passed in sight of the North Natuna on the 9th, and between the Louisa and Royal Charlotte Shoals, with S. W. winds, which continued till she passed Balabac Island on the 19th, at 8 or 9 leagues distance. On the 21st she saw the Royal Captain's Shoal, and the Bombay's Shoal on the following day, and from hence she had moderate breezes often at N. Eastward, and a current of 18 miles some days in her favor, in passing along the coast of Luconia at from 8 to 14 leagues distance. She stood off too soon from this coast, being 20 leagues distant from it when in lat. 16° 48′ N. on the 2d of December, and in attempting to cross over for the coast of China, a strong N. E. gale with a heavy sea, broke all her weather shrouds, which obliged them to wear on the 5th, and take shelter under Luconia to repair the damage sustained. Afterward, she took a departure from Cape Bolina on the 7th, passed to the westward of Pratas Shoal with strong N. E. winds, saw the Lema Islands on the 11th of December, and anchored in Macao Road on this day.

The Herefordshire, and General Kyd, in company, left Sincapour Strait on the 14th of October, 1815, had mostly light breezes from S. W. and Westward till the 29th, when they made the Island Balabac, and the S. W. end of Palawan; from hence, they had strong S. W. and W. S. W. winds, cloudy weather, and rain, in running through the outer channel between the outer and inner shoals, which veered to South and S. S. E., with the same weather, as they approached the coast of Luconia. They kept within 9 or 10 leagues of this coast, till the 3d of November, then nearly abreast of Cape Bajadore, where the wind became variable, and shifted to N. E.; afterward to South and S. E. as they steered over for the coast of China, which they approached far to the eastward, and were 2 days with Northerly and N. E. winds, running W. N. W. and West till they made the Lema Islands, and anchored in Canton River on the 6th of November.

Ships which *sail indifferently*, often adopt the eastern route to China, after the middle of November; or otherwise pass into the Sooloo Sea by the Strait of Balabac, and after reaching the Island Mindanao, proceed to the northward along the West coast of this island, Negroes Island, Panay, Mindora, and Luconia, which is *generally* practicable in the N. E. monsoon.*

* The Glatton, Abergavenny, Lord Thurlow, and Osterly in company, reached lat. 9° N. near Pulo Sapata,

But the most speedy passages, have been generally made along the coasts of Palawan, and Luconia, in October and November; although short gales from the northward, have in some seasons, caused considerable delay to ships proceeding by this route. A ship leaving Malacca Strait, however, will most probably reach China much sooner by the Palawan Passage, than by any other route, during the whole period of the N. E. monsoon.

To sail from China, through the China sea, during the N. E. monsoon;

SHIPS BOUND from CHINA to the Straits of Sincapour, or Banca, ought in March and April, to adopt the Outer Passage by the Macclesfield Bank, which is the most expeditious route in these months; at all other times, the Inner Passage by the coast of Cochin-China, seems preferable. This is the shortest route, and the ease afforded to ships, by steering from the Grand Ladrone immediately before the wind, when blowing strong at N. Eastward, is a great advantage: whereas, a S. S. E. course is steered at times, for the Macclesfield Bank, which often brings the wind and sea before the beam, and strains greatly ships deeply laden. Many have strained so much, that in order to gain upon the pumps, they were forced to bear away for the Inner Passage; others, by persevering in the Outer Passage, have laboured excessively, and some of them at last, foundered with their crews; exclusive of other missing ships, which after leaving China, probably suffered from the same cause. Had those ships at leaving Canton River, steered S. S. W. ½ W. the direct course for the Inner Passage, they probably would not have strained in the least, but have reached their ports of destination in safety.

and in the S. W. monsoon.

DURING the S. W. MONSOON, it has been considered by many navigators, almost impracticable to make a passage down the China Sea: but a fast sailing ship bound to India, will generally succeed by the Inner Passage, during the whole of the S. W. monsoon. If she depart from the Grand Ladrone with an Easterly or S. Easterly wind, which frequently blows for a few days at a time, at all seasons, she will, if bound to Bengal, probably reach her port of destination sooner than by following any of the eastern routes, on either side of Luconia.

Of late years, several ships have made their passage down the China sea, in every month of the S. W. monsoon; others which were indifferent sailers, have not been always so successful. The passage from the Grand Ladrone to Sincapour Strait during the S. W. monsoon,

early in October, 1793; here, they got light N. E. winds with southerly currents, gained no ground during 7 days, and apprehending that they would not be able to make the passage through the China sea, bore away on the 14th of October. In lat. 6° N. lon. 112° E they got westerly winds, which carried them through Balabac Strait, and to Mindanao on the 29th: they proceeded from hence, along the West sides of Negroes Island, Panay, and Mindora, with variable breezes mostly between S.E. and S. W. and arrived, November 7th, in Manilla Bay. Here, they remained until the 7th of December, kept along the coast of Luconia to lat. 17° 20′ N., which they reached on the 12th; passed on the West side of Pratas Shoal on the 15th, and arrived on the 17th at Macao.

The Alfred and True Briton in company, left Sincapour Strait on the 24th of October, 1799, had light northerly, and variable breezes, and reached lat. 7° 40′ N. lon. 106° 42′ E. on the 15th of November: they were drifted back to lat. 5½° N. on the 22d, then stood to the eastward with northerly winds, and passed close to the North end of the Louisa Shoal on the 26th, rounded the South end of Balambangan on the 6th of December, and anchored about 1½ mile off Banguey, with the extremes from N. ¼ E. to S. ¾ E. and the peak N. N. E. and a river's mouth East. With their long boats, they filled up their water from this river, sailed on the 9th, and were until the 17th working with N. E. and Easterly winds through the Strait of Balabac, to the northward of Banguey. They anchored at Sooloo on the 25th, where they procured some bullocks, filled up their water, and sailed again on the 29th of December, and proceeded by the eastern passage to China.

These ships had a very tedious passage from entering the China sea, until they arrived at Sooloo, but they had little or no southerly current after passing the Louisa Shoal: had they adopted the Palawan Passage, and along the coast of Luconia, *it is probable*, they would have arrived much sooner in China, than by the circuitous route of an eastern passage. In some seasons, however, the winds are more favorable for proceeding by the Palawan Passage than in others; and *it is barely possible*, that a ship which sails badly close to the wind, may not always be certain of getting to China by that route, if November is far advanced before she reach the S. W. end of Palawan.

may be accomplished in from 20 to 35 days, by a ship that sails well; particularly, if at her departure, every effort is made to get to the S. Westward near the island Hainan, or rather to get close in with the coast of Cochin-China, as soon as possible.

It may be useful to give a few brief abstracts of passages down the China sea, during the S. W. monsoon, to shew the irregularity of the winds in this season.

Abstracts of passages from China, late in the season, and during the S. W. monsoon.

The Anna, bound to Bombay, left the Grand Ladrone on the 25th of May, 1792, with a S. E. wind, which continued 1 day; it then veered to South, and kept betwixt that and S. S. W.: with these winds, she did not endeavour to reach the coast of Cochin-China, but worked to the southward in the middle of the China sea, and after reaching lat. 15° N. the wind shifted to the eastward of South, and kept mostly at S. S. Eastward until she made Point Calavite on Mindora, on the 14th of June. She then proceeded through the Sooloo sea, Macassar, and Sunda Straits. In lat. 15° N. lon. 115½° E., when the wind veered to eastward of South, and continued in that quarter, she could easily have reached the southern part of the coast of Cochin-China, by standing on the larboard tack; for the current was in general weak, and seldom set to the northward.

The same ship, bound to Bombay, left the Grand Ladrone on the 13th of June, 1793, intending to proceed by the Mindora sea as in the former season, and reached lat. 17½° N., on the 17th: squally weather, and strong winds from S. Westward then set in, and continued with a current to the northward several days, which prevented her from making any progress to the southward; she therefore, bore away on the 21st for the Bashee Islands, and proceeded by the Eastern Passage. After she bore away, the wind continued at S. W. in moderate and light breezes, and the northerly current vanished, for none was experienced in running toward the Bashee Islands.

The True Briton, left the Grand Ladrone on the 27th of May, 1802, having easterly winds she steered to the southward, and saw Cape Bolina on the 7th of June; the wind then came from southward with a northerly current, which induced her to bear away, in order to proceed through the channel between the North end of Luconia and the Babuyanes Islands; but on opening that channel, the wind veered to East and S. E., with a current setting to the northward, which obliged her to pass out among the Bashees, betwixt Monmouth Island and Grafton Island, into the Pacific Ocean.

The Arniston and fleet, left the Grand Ladrone on the 6th of July 1796, and were 10 days reaching the Bashee Islands, with mostly S. Easterly winds.

The Cornwallis, in 1789, proceeded down the middle of the China sea in May and June, and reached Sincapour Strait in about 30 days from Macao; having made several of the shoals to the eastward of Pulo Sapata, during her passage.

The fleet bound to England, left the Grand Ladrone on the 10th of May, 1807, intending to adopt the passage through the Mindora and Sooloo sea; but the wind being at N. E. when they sailed, and veering to eastward, they were obliged to steer for Pulo Sapata, and passed that island on the 22d with a N. E. wind. On the 26th in lat. 7° N. they got the wind light and variable at southward, made Pulo Capas on the 31st, then continued to work along the eastern coast of Malay, against southerly winds and a current setting generally to the northward, until the 18th of June, they got into the strait of Sincapour.

The Laurel left Macao, on the 10th of June, 1788, bound to Tringany and Bengal; she had the wind first at S. S. W., when variable at S. E., East, and N. E., and on the 17th had soundings on the Macclesfield Bank. With a continuance of variable winds, sometimes southerly, at other times from N. E. and N. W., she proceeded to the southward, and on the 27th, passed close to a low sandy island in lat. 8° 43′ N., having a sand bank and reef projecting from it. From thence, the winds were mostly light and variable from South to S. W., with which she got sight of the North Natunas on the 6th of July, and anchored on the 10th in Tringany Road.

The same ship, in the preceding year, left Macao on the 26th of June, bound to Batavia;

had S. W. and S. S. W. winds the first 4 days, then variable at N. W., N. E., and S. E., the following 4 days; afterward, S. E. and Easterly, until she made the S. W. part of Palawan and the adjacent shoals, on the 8th of July. She went through Balabac Strait, along the N. E. coast of Borneo, through the strait of Macassar, and did not anchor at Japara on the Island of Java, until the 12th of August.

The Lord Castlereagh and Charlotte, left the Grand Ladrone about the middle of July 1807, intending to proceed by the Eastern Passage outside of Luconia, being bound to Bombay. The winds being at eastward, they were retarded greatly, encountered a Ty-foong near the Bashee Islands, in which the Charlotte lost her sails and returned to Macao. The wind continuing at eastward, the Castlereagh bore away for the Inner Passage, betwixt the shoals and Hainan, then proceeded along the coasts of Cochin-China and Cambodia, the wind prevailing from eastward most of the time. From thence, she soon got to Tringany and Malacca, and after remaining a month at the latter place, had a tedious passage to Prince of Wales' Island; and in working out between Achen Head and the Nicobars, in October and early in November, she experienced westerly winds. Although this ship got easily down the China sea in July, it is probable, that if at leaving the Grand Ladrone, the wind had permitted her to proceed into the Pacific Ocean, she would have made a quicker passage to Bombay; for the route from Malacca Strait to the western coasts of India, is generally very tedious in the S. W. monsoon.

The Thames, Captain Williams, left the Grand Ladrone on the 20th of August, 1800, bound to England, had the winds variable, mostly at S. Eastward, for several days, which prevented her from making much progress in that direction toward the Mindora Passage; and the season being far advanced, it was resolved when in lat. 19° N. on the 25th, to proceed down the China sea, toward Sincapour Strait. She had soundings on the Macclesfield Bank on the 29th; afterward, the winds were often at S. W. and S. S. W., blowing strong with a heavy sea, and sometimes variable light breezes were experienced, which prevented her from reaching Sincapour Strait until the 9th of October.*

The Asia, bound to Bombay, with the Sarah in company, left the Grand Ladrone on the 20th of August, 1803, made the Taya Islands on the 23d, Pulo Canton on the 29th, passed Cape Padaran on the 4th of September: from hence, with southerly and variable winds, they worked to the southward, saw Pulo Condore on the 14th, passed outside of Pulo Capas, and inside of Pulo Timoan, Pulo Tingy, and the circumjacent islands, close along the Malay coast, and on the 30th got into Sincapour Strait.

The Asia, bound to Bombay, left the Grand Ladrone on the 10th of September, 1798, had a gale at northward on the 12th, which veered to N. W. and West on the following day, then abated: at sun-set on the 15th, the South part of Hainan bore from N. E. to N. W., distant 6 or 7 leagues, in 45 fathoms water; stood S. Westward with a S. S. E. and southerly wind, and in 49 fathoms on the following noon, saw the coast of Cochin-China. She proceeded along this coast, with moderate and variable breezes, saw Cape St. James on the 21st; with westerly winds she then stood to the southward, passed 15 leagues to the eastward of Pulo Condore, outside of Pulo Timoan and Pulo Aor, and on the 1st of October entered the strait of Sincapour.

The Anna, (and 3 other ships belonging to Bombay,) left the coast of China on the 15th of September, 1803, had variable winds from N. W. to North, round to N. E., East and S. E., made Pulo Canton on the 19th, experienced strong southerly currents along the coast of Cochin-China to Cape Padaran, which she passed on the 22d. Here, we got strong S. W. gales on the 23d and 24th, also on the 27th and 28th had strong gales, hard squalls and a high sea, when working betwixt Pulo Condore and the coast of Cambodia, which

* Captain Williams, was the first commander, in the Company's service, who attempted and succeeded, in beating down the middle of the China sea with a large ship against the S. W. monsoon, notwithstanding the Thames had a weakly crew at the time.

abated on the 29th. Worked along the coast, until in sight of Pulo Oby on the 30th, saw the Redang Islands on the 5th of October, then proceeded to the southward in sight of the Malay coast, with the winds mostly variable and light between S. E. and S. W., inclining to land and sea breezes, and a drain of northerly current. We passed close on the East side of Pulo Aor on the 10th, and on the 12th, entered the strait of Sincapour.

The Upton Castle from Manilla, bound to Bombay, endeavoured to pass through the strait of Manilla, in July, into the Pacific Ocean; but here, she met with strong easterly winds and a lee current, which induced Captain Beyts the commander of this ship, to steer westward through the China sea, and the easterly winds continued till he anchored at Nhiatrang on the coast of Cochin China, early in August, where after receiving a supply of water, he worked along the western side of the China sea to the strait of Sincapour.

FROM WHAT HAS BEEN STATED, it appears, that in a fast sailing ship, a passage may be made down the China Sea during any period of the S. W. monsoon; although in some years, with considerable difficulty. In June, July, and August, an indifferent sailing ship should not attempt it, except she depart from the coast of China with a favorable wind: and even in a fast sailing ship, unless some *material advantage* is in view, she ought not to proceed down the China Sea in these months, if bound to the western parts of India. A ship bound to Bengal, may sometimes make a tolerable passage, by sailing early from China; but those bound to Bombay, will generally have a tedious passage from Achen Head to that port, in October and part of November; and if a ship depart from China in May or June, she will *probably* reach Bombay as soon, or sooner by an Eastern Passage, than by beating down the China Sea, and proceeding through the straits of Malacca, or Sunda.

## *ISLANDS in the S. WESTERN PART of the CHINA SEA: EAST COAST of MALAY; with SAILING DIRECTIONS.*

Islands between Borneo and the Malay coast;

EXCLUSIVE of the islands contiguous to the West coast of Borneo, there are several groups, and detached islands to the northward of the equator, situated in the space betwixt that coast and the Malay peninsula, which require notice; for ships passing between Sincapour Strait and the Coast of Borneo, or proceeding into, or out of the China Sea by the Carimata Passage, generally pass near, or among some of these islands.

Geo. site of St. Barbe.

ST. BARBE, called PULO PANEEKY BASSAR, by the Malays, in lat. 0° 7′ N., lon. 107° 15′ E., or 9 miles East of Gaspar Island, and 2° 40′ East of Pedro Branco by chronometers, is a high bold island, of triangular form, about 3 miles long; when first discerned, it appears like 2 or 3 islands, being lower at the centre than at the N. E. and West parts. The N. W. point has 2 small rocks nearly joining to it, and a bay on the East side of the point, where water may be procured, and some of the sandy beaches afford turtle at times; and a ship may anchor off the S. E. end of the island, in 25 or 26 fathoms, where also wood and water may be procured. As the shore is fronted by a reef, boats can only land at high tide, at which time, fresh water may be rafted off from the bay at the North part of the island, which is the best anchorage in the southerly monsoon. The tide rises here about 6 feet on the springs, and flows to 6 hours on full and change of the moon.

DIRECTION ISLAND, or PULO PANEEKEY KATCHEEL, in lat. 0° 15′ N.,

lon. 108° 5′ E., or E. ¾ N. 16½ leagues from the former, is somewhat larger, and of considerable height: betwixt it and St. Barbe, the soundings are generally from 20 to 30 fathoms; to the westward of the latter 35 to 25 fathoms, decreasing to 20 and 18 fathoms toward Lingin. About 7 leagues N. N. W. from Direction Island, the Hillsborough had 7 fathoms on a rocky bank, which is *probably* not dangerous. Geo. site of Direction Island.

PULO DATTOO, in lat. 0° 7′ N., distant about 10 or 11 leagues eastward from Direction Island, and 4 or 5 miles to the westward of Souroutou, lies within 8 or 9 leagues of the Borneo coast, and being high, it is visible from the ships at anchor in Pontiana, and Mampava Roads. To the N. Eastward of Pulo Dattoo, several islands stretch along the coast from lat. 0° 20′ to 0° 50′ N. betwixt Mampava and Sambas, having safe channels and regular soundings among them. From Pulo Dattoo, the depths decrease from 18 or 19 fathoms, to 4 and 5 fathoms, within 3 or 4 miles of the Borneo shore. Pulo Dattoo, and other Islands.

ST. ESPRIT, are a group of islands, extending about 4 leagues W. by N. and E. by S., the body of them being in about lat. 0° 34′ N.; the easternmost island, is in lat. 0° 34′ N., lon. 107° 13½′ E., bearing from the North bluff point of St. Barbe N. 3° W., distant 27 miles. Geo. site of St. Esprit Islands.

Green Island, in lat. 0° 43′ N., is a small square island, with a sandy beach, and covered with trees, situated in a direct line between the Tambelan, and easternmost St. Esprit islands, rather nearer than mid-channel to the latter.

TAMBELAN, or TUMBELAN ISLANDS, about 12 leagues N. Eastward of those last mentioned, are a group of considerable extent, in a N. W. and S. E. direction, and moderately elevated; the large Tambelan or Easternmost Island, is in lat. 1° 0′ N., lon. 107° 35′ E. by chronometer. There is good anchorage and shelter from most winds on the West side of the Great Tambelan, with a channel near a mile wide between its South point and the islets adjacent. There is also a wide channel between the islands at their western part, leading eastward to the Great Tambelan, with 30 to 18 fathoms water, formed between the N. E. and S. W. division of these islands, in an extensive bason or harbour. Directly North from the easternmost island, in lat. 1° 12′ N. there is a gap rock, and another small rock to the eastward near it; the depths around these rocks are 24 to 30 fathoms, and the passage betwixt them and the islands is safe, if care be taken to avoid the Europe Shoal. A ship touching at the Tambelan Islands, may sometimes procure a few goats, poultry, or other refreshments, although little is to be expected here, the natives being very poor. There is a white rock about 7 miles E. S. E. from Pulo Jarra, or the S. Easternmost island of the Tambelans, with a safe passage between them. Geo. site of Tambelan Islands.

EUROPE SHOAL, on which the company's ship of this name grounded in 1816, is a new discovery, situated near to the Tambelan Islands. It extends about ½ a mile East and West, and is ¼ mile in breadth, with various depths on it, from 5 fathoms rocky bottom, to 2 fathoms the least water. When just clear of the edge of the shoal, extremes of the Tambelans bore from S. by W. ½ W. to S. E., distant about 4 leagues. Stood a little to the N. E. and anchored in 25 fathoms, with Rocky Island bearing W. ¾ S., Gap Rock East, Tambelans from S. by W. ¾ W. to S. E. ¾ E., distant about 5 leagues. By the bearings of the Tambelans, this dangerous shoal appears to lie in lat. 1° 12′ N., lon. 107° 20′ E.* Europe Shoal. Geo. site.

* This communication received from Capt. D. Inverarity, secretary to the Marine Board at Calcutta, is accompanied by the following remark. I do not think that these bearings are very correct, and it appears that I must have passed close to this shoal in my passage from Borneo to Malacca Strait, in the Sophia, without discovering any appearance of shoal water.

Rocky Island, and others.

ROCKY ISLAND, in lat. 1° 9′ N., distant about 3 leagues W. N. W. from the N. W. extremity of the Tambelans, is small, and has an islet close to it. SADDLE ISLAND, about 4 leagues farther to the N. W., is situated in lat. 1° 16′ N. CAMEL ISLAND, or CAMEL'S HUMP, in about lat. 1° 10′ N., is 4 leagues to the S. W. of Saddle Island, and 6 or 6½ leagues nearly West from Rocky Island: the channels betwixt these islands are safe, the depths from 26 to 34 fathoms.

Geo. site of St. Julian.

ST. JULIAN, in about lat. 0° 54′ N., lon. 106° 48′ E., is a small island, which by several navigators, has been mistaken for the Camel's Hump.

Geo. site of Victory Island.

VICTORY ISLAND, in lat. 1° 34′ N., lon. 106° 22′ E., is of moderate height, covered with wood, sometimes called Woody Island. About 10 miles E. S. Eastward from it, in lat. 1° 32′ N., there is a barren whitish island, called sometimes, French White Rock. The depths near Victory Island, are 34 and 36 fathoms, decreasing a little to the westward, as the entrance of Sincapour Strait is approached.

Anambas Islands.

ANAMBAS ISLANDS, are extensive, and may be considered as consisting of 3 divisions or groups, with safe channels between them. SOUTH ANAMBAS, or Southern Group, lie North a little westerly from Victory Island, and extend from lat. 2° 18′ to 2° 40′ N., having to the westward in lat. 2° 18′ N., lon. 105° 35′ E. a White Rock, high above water, with a small saddle island several leagues to the N. E. of it.

Geo. site.

Geo. site of Polo Domar.

PULO DOMAR, in lat. 2° 45′ N., lon. 105° 27′ E., or 52½ miles East from Pulo Aor, is a high barren rock, with 34 or 36 fathoms water close to it; 35 to 40 fathoms betwixt it and the Anambas; and 32 to 36 fathoms, in the proper channel between it and Pulo Aor.

Geo. site of Anambas.

MIDDLE, or GREAT ANAMBAS, are a group of high islands, nearly joining to each other: their western limit is in lat. 3° 9′ N., lon. 105° 41′ E., and some of them are the largest of the Anambas Islands.

Another small group, to the N. Eastward of these, called NORTH ANAMBAS, forms the N. E. limit of these islands, in lat. 3° 27′ N., lon. 106° 15′ E. One of the islands with a peak upon it, is in lat. 3° 10′ N.

The Anambas are seldom correctly delineated, having never been surveyed, nor much frequented. The largest islands are inhabited, and abound with tropical fruits and vegetables, but it is dangerous landing without proper precaution, for the Malays who reside on them, will massacre, or make slaves of strangers, if they perceive a convenient opportunity.

Natunas.

NATUNAS, extend from the coast of Borneo a great way to the N. Westward, distinguished as 3 groups, the North Natunas, Grand Natuna and its contiguous isles, and South Natunas near Borneo; this group is subdivided by a safe channel, and the outside channel is spacious, betwixt it and the Grand Natuna.

Geo. site of Northern Natunas.

NORTH NATUNAS, consisting of a long island stretching N. E. by N. and S. W. by S. about 7 miles, with a small island close to each extremity, are highest at the northern part, but to the southward, rather low; and close to the N. W. point of the northernmost island, there is a small islet. The northern extremity of these islands is in lat. 4° 49′ N., lon. 108° 2′ E., measured from Pedro Branco by chronometer. There is 35 fathoms water about 1½ mile N. N. W. from the northern island, but the whole of the western coast of these islands is lined by a dangerous reef, which extends nearly 4 miles West from their southern extremity, and S. by W. 2 miles from this extremity in lat. 4° 39′ N. lies a rock above water. The soundings near these islands, are irregular in some places, for the Laurel had from 20

to 10 fathoms, and at one time 7 fathoms coral rock, with the islands bearing from N. W. by W. to W. S. W., distant 5 or 6 miles; when the body of them bore S. W., distant 3 or 4 miles, the soundings were more regular. Saddle Island, in lat. 4° 33′ N., distant about 6 leagues S. W. by W. from the North Natunas, and 8½ leagues N. N. Westward from N. W. Island, which lies to the West of the North end of Grand Natuna, has a reef projecting from its South end, and another from the North-west end, with less than 3 fathoms water on it, and 40 fathoms close to. A rock above water lies about 3 or 4 miles to the S. S. W. of this island, with 28 fathoms between them. The North Natunas produce cocoa-nuts, and some other fruits, and they are inhabited by Malays.

A shoal of breakers about 2 miles in extent, is said to be situated in lat. 4° 25′ N., seen by the Success on the 14th of November, 1815: when the breakers were seen from the deck, bearing E. by S. about 2 miles, Saddle Island bore N. W. ¾ W., the N. E. extreme of North Natuna N. by E., the N. W. extreme of Grand Natuna S. by W. ¼ W., distant about 6 leagues, and about 5 leagues from Saddle Island. She afterward tacked in 35 fathoms, within a mile of the breakers.

Geo. site of Grand Natuna.

GRAND, or GREAT NATUNA*, extends from lat. 3° 40′ to 4° 13′ N., and the 2 small islands off the North point, joined to it by a reef, extend about 3 miles farther, with 17 fathoms within a mile of them. The northern extreme is in lon. 108° 15′ E., and the eastern part of the island in 108° 26′ E. by chronometer, and it is about 6 or 6½ leagues in breadth East and West: the land in the interior is high to the South of lat. 4° N., where stands a Quoin Hill, and a mountain near the East point, which may be seen 14 or 15 leagues; but some of the points that project into the sea, are low, particularly from lat. 4° N. to the North end of the island is all low, with red cliffs at the northern extremity. Reefs and islets line the eastern coast, rendering it dangerous to approach under 2 leagues in some places, at which distance the depths are from 34 to 46 fathoms; the western coast is also fronted by islands of various sizes, among which, the chief is S. W. Island, in lat. 3° 34′ N. its southern point, and it is high. Peaked Island, in lat. 3° 54′ N. is also high; and N. W. Island, situated in lat. 4° 7′ N., lon. 107° 52′ E., which is lined by a reef, projecting a mile or more from its South point, with anchorage of 20 fathoms on the West side.

In lat. 4° 1½′ N., and 6 miles S. S. W. from N. W. Island, lies a reef of coral rock with only 2 fathoms on it, and from 20 to 30 fathoms near it on the West and S. W. sides: about 5 miles S. W. by S. from the above reef, and 3 leagues W. N. W. from Peaked Island, and a little farther from N. W. Island, there lies another coral shoal in lat. 3° 57′ N., having 3 fathoms rocks on it, and from 20 to 30 fathoms mud close around.†

Geo. site of Haycock Island.

HAYCOCK ISLAND, distant 10 or 11 leagues S. Westward from West Island off Grand Natuna, in lat. 3° 20′ N., lon. 107° 34′ E., is high and of a conical shape. LOW ISLAND (called also Separate) lies to the southward of it, in lat. 3° 1′ N., and is of considerable extent. A reef extends above a league from Haycock Island to the S. Westward, and also to southward.

DIANA SHOAL, is a dangerous coral reef to the N. Westward of Low Island, which Lieut. Kempthorne got upon, in H. M. brig Diana, and from whose journal the following account is taken. December 10th, 1808, at ½ past 7 A. M. saw the bottom, and sounded in ¼ less 5 fathoms, but lost the lead, by it getting fixed in the coral. Wore to the eastward, and had ½ 5, 6, 7, 8, 10, 11, 17 fathoms, then no bottom at 20 fathoms. The boat, sent to sound, had 3½ fathoms, and several casts of 5½ fathoms on the points of coral, with

* Called by the Malays Pulo Boong-ooran.

† These 2 shoals were explored by Lieut. Ross in the Company's surveying ship Discovery, in 1814.

deep water between them: two spots of discoloured water, one bearing South, and the other S. W. by W. about 2 miles, appeared much shoaler than where the boat sounded. The shoal seemed to extend N. E. by E. and S. W. by W., on which no broken water was visible, but when the swell rolled over the points of coral, it resembled a shoal of fish.

When the bottom was first seen in ¼ less 5 fathoms, the N. E. point of Low Island bore S. E., and the N. W. point with the S. W. point just open of it, bore S. S. E. ½ E., Haycock Island N. 43° W., distance from Low Island about 9 or 10 miles. Where the boat sounded, she had nearly the same bearings, but was ½ a mile more to the N. W., with Haycock Island just in sight from her. Made Low Island in lat. 3° 0′ N.

The channel between the Grand Natuna and the Anambas Islands, is wide and safe in day-light; but as several coral spots with very little water on them have been discovered in the vicinity of the Natunas, within the last 10 years, a good look out is necessary, as some unknown shoal patches may probably exist hereabout.

Geo. site of South Natunas.

SOUTH NATUNAS, form a kind of square about 10 or 12 leagues in diameter; the northernmost of them called Flat Island, in lat. 3° 3′ N., lon. 108° 54′ E., is of considerable extent from North to South, formed of low land, except the North end, which is of moderate height: to the southward of it, there are some islets and rocks, and a Rocky Shoal about 6 or 7 miles to the eastward. WEST ISLAND, in lat. 2° 42′ N., lon. 108° 40′ E., 9 leagues S. W. ½ S. from Flat Island, is of considerable height, and bears from the small island in lat. 4° 0′ N., off the East point of Grand Natuna, S. 7° E. distant 80 miles: a reef projects ½ a mile from the North and West sides of the island, and farther from the N. E. part; and at the distance of 2½ miles N. E. by E. from it, there is a high rock, apparently environed with shoal water. The depths in the channel between the Grand Natuna and these islands, are from 40 to 52 fathoms. EAST ISLAND, in lat. 2° 42′ N., lon. 109° 26′ E., is high, and distant about 15 leagues to the eastward of West Island. SOUTH ISLAND, or Sapata, in lat. 2° 28′ N., and 7 or 8 leagues S. Westward of East Island, is also called High Island, and has some islets near it.

The passage between the South Natunas, formed by Flat Island Group and West Island on one side, and by East Island and South Island on the other, is wide and safe, with soundings from 20 to 30 fathoms. The islands on the East of it are steep to, but Flat Island Group must not be approached close, the ground being rocky to the distance of 3 or 4 miles off; and the shoal to the eastward of the island is dangerous, on which the Pigot nearly grounded.

To the southward of the South Natunas, there are some other islands adjacent to the coast of Borneo: of these, the South Haycock in lat. 2° 13′ N., lon. 108° 57′ E., is the most conspicuous; and the 2 small islands St. Pierre in lat. 1° 56′ N., lon. 108° 53′ E., about 6 or 7 leagues distant from the South Haycock, are in one with each other bearing E. ¼ N.: a little outside of these islands, the soundings are from 22 to 28 fathoms. About 3 miles S. S. W. from the largest island of St. Pierre, there is a Dangerous Ledge of rocks with breakers on it; having 18 fathoms mud, when it bears North, about 2 miles distance.

Pulo Tingy, the channel inside of it, and contiguous isles.

PULO TINGY, in lat. 2° 17′ N., bearing nearly W. S. W. from Pulo Aor 9½ or 10 leagues, is the southernmost of the islands situated near the East coast of Malay; it is conspicuous by a very high peak, which rising gradually from the low land near the sea, terminates at the summit in a sharp spire or cone. A chain of islets project from the S. E. part of the principal island, about 3 leagues to S. S. Eastward, the outermost of them being a round bluff rock in lat. 2° 8′ N., and 4 or 5 leagues distant from the main. There is another small island inside, adjoining to Pulo Tingy, which is on with the peak bearing N. N. E. ½ E.; and N. W. by N. from this small island, there is a rock about the size of a boat, off a bluff point on the main, which forms the northern extreme of a bay. From the N. W. point

of Pulo Baby, which is an island of considerable size, and the nearest to the northward of Pulo Tingy, the rock mentioned bears N. W. by N. $\frac{3}{4}$ N.: this, and the other rocks near the main, are not high above water.

The passage inside of Pulo Tingy, betwixt it, the contiguous islets, and the main land, is safe in day-light; with regular soundings, 6 and 7 fathoms near the main, and 12 or 14 fathoms near Pulo Tingy. The course through is about N. W. by N., but it would be dangerous to run in the night, on account of numerous islets, and some rocks above water. On the North side of Pulo Tingy, in a small bay, there are cocoa-nut trees, banana trees, and huts; and a watering place at the South end of the island.

PULO AOR, or WAWOOR, is in lat. 2° 29′ to 2° 30′ N., lon. 104° 34½′ E., or 9° 9½′ W. from Grand Ladrone, by mean of many chronometers; Captain Heywood made it 2° 10′ E. of Malacca, I made it the same, and 9 miles East of Pedro Branco by mean of chronometers in different voyages, and Captain C. M'Intosh made it also 9 miles East of Pedro Branco by chronometers. This island is generally adopted as a *point of departure*, by ships bound to China; they also steer for it, on their returning passage, which makes a near approximation of its geographical situation, very desirable; and there is reason to think, that the position stated above, is within *one mile* of its true situation. It is small, but high and covered with trees, formed of 2 hills with a gap between them, which gives it the appearance of 2 islands when viewed at a great distance bearing N. E. or S. W., and resembles a saddle on a nearer approach; but when it bears to the N. W., the hills are in one. The eastern-most hill, is of round form, like a dome, rather higher than the other, and in clear weather, may be seen 15 or 16 leagues from the deck; at such times, Bintang Hill and Pulo Aor are visible together, when mid-way between them. The bay on the S. W. side of the island, affords good shelter in the N. E. monsoon, when the wind is any way between North and E. S. E; and here, persons unacquainted with the entrance of Sincapour Strait, frequently anchor in dark hazy blowing weather, until it becomes more favorable for running into that strait. Close to the S. E. point of Pulo Aor, there is an islet covered with trees, and contiguous to the N. W. point of the bay, another: to the northward of the latter, there is a third islet larger than those, separated from the North end of the principal island, by a narrow, but *probably* deep gut. Geo. site of Pulo Aor.

If coming from the northward, and intending to anchor in Pulo Aor Bay during N. E. winds, pass on the West side of the island, in order to fetch into the bay so far as the watering place, which is a small running stream on the North side of it. After rounding the West side of the island at any convenient distance, which is steep to, haul into the bay until the small island is on with the N. W. point of it, and anchor in 20 to 15 fathoms sandy bottom, with the extremes bearing from N. W. to S. E. ½ E., off shore about ½ a mile: but sail ought to be reduced in time, because from 20 fathoms the bank is steep, and it would be imprudent to shoal under 15 fathoms in a large ship. To sail into the bay.

The island is inhabited, and there are a considerable number of huts around the bay, where firewood and some cocoa-nuts may be procured, but no other refreshments except water. Ships water with their own boats, for the natives although shy of strangers, are generally found to be inoffensive; it is, however, imprudent, to let the sailors go up into the country. There is a rise and fall of tide about 5 or 6 feet perpendicular, although the current in the offing sets mostly with the monsoon. The depths near Pulo Aor, are from 32 to 35 fathoms to the northward and eastward, 24 and 25 fathoms to the westward, decreasing to 16 or 17 fathoms toward Pulo Tingy, and to 21 fathoms close to the South end of Pulo Pisang.

PULO PISANG, or PAMBEELAN, in lat. 2° 37′ N., distant about 5 leagues N. W. by W. from Pulo Aor, resembles the latter when seen in hazy weather bearing to the S. W. or Southward; for it is formed of 2 hills with a gap between them, which gives it the ap- Pulo Pisang.

pearance of a saddle, but it is not so high as Pulo Aor. It is said, that water may be got upon Pulo Pisang, but ships seldom stop here, for it is not inhabited, consequently affords no supplies. The bay on the S. W. side is similar to that of Pulo Aor, with the exception of the islets; the anchorage in the bay is in 18 or 19 fathoms 1 mile off shore. A very remarkable perpendicular rock will be seen on the side of the hill close to the sea.

Geo. site of Pulo Timoan; inside channel, and contiguous isles.

PULO TIMOAN, or TEOMAN, the largest and highest of these islands, extends about 10 miles North and South, and is 4 or 5 miles in breadth; the South end of it being in lat. 2° 44′ N., bearing about N. W. ½ W. from Pulo Aor 8 or 8½ leagues, and 10 miles distant from Pulo Pisang. The northern extremity is in lat. 2° 54′ N., and both the North and South parts are in lon. 104° 15′ E. At a small distance from the N. W. end of the island, there is a group formed of 4 small ones, the northernmost of which, a round small island, is in lat. 2° 56′ N.; the next to this has a flat appearance, and is larger than the others. Pulo Timoan may be discerned 18 or 20 leagues in clear weather, and on its South end, 2 remarkable peaks, standing on 1 base, rise almost perpendicularly from the sea to a great height, called from their aspect, the Asses Ears. There is a village on the S. E. side of the island, in a small sandy bay, with anchorage in 20 or 22 fathoms sand, during fine weather; but the bay on the S. W. side, in lat. 2° 48½′ N., affords the best shelter in the N. E. monsoon. If you intend to anchor here, when coming from the northward, pass close round the N. W. end of Pulo Timoan, betwixt it and the small islands, in which passage, the depths are 24 to 20 fathoms, and it is 2 or 3 miles broad. Keeping about 1½ or 2 miles from the western shore of Timoan, the water will shoal gradually in the bay to 10 or 9 fathoms sand and gravel; the best birth is in 15 or 16 fathoms, with the island bearing from E. S. E. to N. N. W., and the middle of the sandy bay N. N. E. ½ E. There is a small river at the East side of the bay, where boats can fill their casks, but a bar at the entrance prevents their going in and out at low water; at a small rivulet on the N. W. side of the bay, fresh water may be filled at all times. Firewood may be procured in abundance near the shore. Refreshments are not to be had here, the bay not being inhabited, although in several parts of the island, there are fruits, vegetables, and some cultivation. There is also a stream of fresh water at the South end of the island, which runs over a stony beach into the sea, at the foot of the hill that slopes down from the Asses Ears to the southward. From this watering place, the peak of Pulo Tingy bears S. 6° W., centre of Pulo Pisang S. 50° E., highest part of Pulo Aor S. 54° E., a small islet in the offing S. 8° W., and the extremes of Pulo Timoan from East to S. 68° W. These bearings were taken by Captain William Richardson, on shore, when he watered here in the Althea, in March, 1806. Ships seldom touch at this island, and persons landing on it, must be guarded against deceit, nor ought they to penetrate into the interior, for the natives are little known to Europeans.

Along the West side of the island, there are tides, the flood setting northward, and the ebb to the southward, 1 or 1½ mile per hour at times; it is high water at 6 hours on full and change of the moon, and flows perpendicularly 7 or 8 feet.

Near the South end of Pulo Timoan, there is a small island, and another small *rocky* island to the S. W., about 2 or 2½ leagues from the Asses Ears, and the same distance from the former island: the channel between these islands is very safe, with regular soundings of 15 to 18, and 20 fathoms within 1½ mile of the S. W. end of Pulo Timoan. After passing between these islands, the depths are mostly 16 to 14 fathoms soft ground, in steering N. Westward through the channel, bounded on the East side by the group of 4 islands off the N. W. end of Pulo Timoan; and on the West side by 3 small islands about 3½ or 4 leagues to the S. Westward of these. This channel on the West side of Pulo Timoan, is generally from 2½ to 4 leagues wide, and clear of danger, nor does there appear to be any around that island, but what is visible above water.

SOUNDINGS, in a N. N. W. direction from the North end of Pulo Timoan, are generally 17 and 18 fathoms; N. by W. from it 10 or 11 leagues, 19 and 20 fathoms; 26 fathoms N. by W. about 4 leagues from it; and nearly close to the northern extremity of the island, 25 and 26 fathoms, which increase to 33 and 34 fathoms when it bears South 15 or 16 leagues. When the North end of the island bears S. S. W. about 2 leagues, the depth is 25 fathoms; when bearing West about 5 leagues, 27 or 28 fathoms; these depths continue about 4 leagues from the East side, and until Pulo Pisang bears W. S. W. about the same distance: as Pulo Aor is approached, they increase to 30 or 32 fathoms. Soundings near those islands.

During the night, or in hazy weather, several ships have at various times, found themselves close to the North end of Pulo Timoan, when they were well to the eastward of it by the reckoning. Sailing directions.

This may always be prevented when coming from the northward in thick weather, by attending to the lead, and not coming under 32 or 33 fathoms when these islands are approached. When in lat. 3° 30′ N., it will be proper to keep out in 33 fathoms, and if you borrow not under 30 fathoms, will pass several leagues to the eastward of Pulo Timoan and Pulo Pisang; but to pass outside of Pulo Aor, she must haul off into 33 or 34 fathoms, for there are 32 and 33 fathoms within 3 or 4 miles of the N. E. and eastern parts of this island.

THE ARCHIPELAGO of small islands to the westward of Pulo Timoan, and Pulo Pisang, are numerous, some of them being close to the coast, but the greater part, 2 and 3 leagues off it. Inner Channel along the coast.

Betwixt these and the Malay coast, there is a safe channel for ships of any description, by keeping along the coast at from 3 to 4 or 5 miles distance, when passing inside of these islands and the others adjoining to Pulo Tingy. The depths in this INNER CHANNEL, are 8 to 11 fathoms in the fair track, generally soft ground; with a few casts of sand in some places, about mid-way between Pulo Tingy and the main. With a working wind, you may borrow toward the main, *generally* to 7, and in some places to 6 fathoms, and stand off to 11, 12, and 13 fathoms. The channel is safe in the day, but in the narrow parts among the islands, it is prudent to anchor at night, because some of the rocks or islets, are very little above water: several ships have, nevertheless, proceeded through in the night.* There are tides here at times, setting along the coast, but currents predominate when the wind blows strong, which run to the southward in the N. E. monsoon, and in the opposite direction during the southerly monsoon.

In lat. 2° 43′ N., and bearing W. $\frac{1}{4}$ S. from the South end of Pulo Timoan about 9 or 10 leagues, there is an island of considerable size near the main, with some small ones to the N. W. of it, and others close to the shore; close under the West side of the large island, there is good anchorage in 4 and 4$\frac{1}{2}$ fathoms stiff mud, where vessels may be sheltered from all winds. It is called BLAIR'S HARBOUR, and is easy of access, by passing close inside of the small islands, or betwixt them and the North point of the large one; there, the depth is 6 and 7 fathoms, decreasing to 5 and 4$\frac{1}{2}$ fathoms inside. By digging wells 5 feet deep, about 20 or 30 yards from high water mark, on the large island, plenty of good water may be procured. There is good anchorage under some of the other islands farther out; Blair's Harbour.

* The ships, Seton and Surprise, from China, on the 11th of November 1796, passed inside of Pulo Varela, then steered along the coast in soundings of 10 to 13 fathoms; and in the night, passed inside of Pulo Tingy, where they had 9 to 7 fathoms, regular soundings.

The ship, Laurel, from Tringany, worked to the southward through this Inner Channel, on the 18th and 19th of September, 1788, and was under sail part of the night, when to the northward of Pulo Tingy. The Asia, and Sarah, from China, bound to Bombay, passed along the Malay coast, through this Inner Channel on the 26th and 27th of September, 1803; these ships, prudently anchored during the night, when in the narrow part of the channel among the islands.

The Margaret, on the 20th September, 1802, worked to the southward between Pulo Tingy and the main, standing in to the shore within $\frac{1}{2}$ a mile in 5$\frac{1}{2}$ fathoms, and off to 9 and 10 fathoms.

Captain Purefoy, in a gale at N. E., ran under 1 of them, which he called Shelter Island; here, he remained at anchor in smooth water, until the gale became moderate and the weather clear.

Pulo Varela, the rock, and banks adjacent;

PULO VARELA, in about lat. 3° 16′ N. bearing N. W. 10 leagues from the North end of Pulo Timoan, is a barren rock 3 or 4 leagues from the main, crowned with a few bushes, which may be discerned about 5 leagues off. There is a ledge of rocks even with the water's edge, about 1 or 2 miles N. by E. ½ E. from Pulo Varela, on which the sea breaks in bad weather; and about 2 leagues to the N. Eastward of it, there is a rocky bank with overfalls, the exact position of which is not well known, but *probably* it is not dangerous, for the least water on it is thought to be about 6 fathoms.

It appeared to be this bank, that we got upon in the Anna, on the 9th of October, 1803, on our passage from China. We were in 17 fathoms at sun-set, Pulo Timoan in sight bearing S. S. E. ½ E., stood S. W. by S. with the wind S. Easterly, shoaling gradually to 13 fathoms at 9 P. M. and tacked: when about, steering E. ½ N., shoaled to 9 fathoms hard bottom, then 2 casts of 7 fathoms rocky, next cast 15 fathoms, and for a short time afterward had overfalls from 11 to 13 fathoms, then deepened gradually in soft soundings. By computation from our observations on the preceding and following days, this bank where we had 7 fathoms, is in lat. 3° 20′ N. and bears N. 40° W., from the North end of Pulo Timoan about 11 leagues; but as Pulo Varela could not be discerned, and being night, we had not the means of determining the exact situation. This is probably the same bank that the General Elliot is said to have anchored upon, about 3 leagues E. ½ N. from Pulo Varela, which by examining with her boats, was thought to extend North and South about 3 miles, and to be about ½ a mile in breadth. She had 18 fathoms before getting on the edge of the bank, and the least water found upon it was 6 fathoms coral rock. Betwixt it and Pulo Varela, regular soundings were found, 13 and 14 fathoms sandy bottom, and in some places mud. The bank will be avoided, by keeping out in 20 or 22 fathoms.

and inside channel,

The channel along the coast, inside of Pulo Varela, is very safe; for although the bottom is hard sand in some places, the soundings are generally pretty regular, about 11 or 12 fathoms near the island and the rock to the northward of it, shoaling gradually toward the main.

In lat. 3° 51′ N. and 50 miles West of Pulo Aor, Captain W. Owen, on the 2d of October, 1807, at 3 A. M. steering S. by E. ½ E. shoaled from 13 to 11, 9, 8, and 7½ fathoms, hauled out E. S. E. and deepened fast to 8, 10, 12, and 16 fathoms: being night when he got these shoal soundings, the situation assigned to them is by computation.

East coast of Malay.

EAST COAST OF MALAY, from Point Romania to opposite Pulo Varela, is mostly low and woody; its general direction is N. N. Westward, and when clear of Romania Reef, safe to approach by the lead. About 9 leagues to the North-West of Pulo Varela, in lat. 3° 31′ N. Pahan or Pahang River is situated, formerly a place of considerable trade. On the 11th of September, 1803, the Generous Friends anchored in 8 fathoms in Pahan Road, and observed the lat. 3° 31′ N. Tingoram, a large and deep bay with 3 islets in it, lies about 12 leagues farther North in lat. 4° 12′ N., in which the depths decrease regularly to 7 fathoms mud. Between Pulo Varela and Tingoram Bay, the coast is in general safe to approach to 8 or 7 fathoms; but there are frequently overfalls of 1 or 2 fathoms in the offing, on ridges that lie parallel to the coast; and there are some spots of 7 or 8 fathoms sand and gravel, with 9 fathoms inside of them.

From Tingoram, the coast extends about 11 leagues N. by W. and North, to Pakango River, forming several sandy bays: a chain of mountains commences inland, nearly abreast of Pulo Varela, which converges toward the coast at Tingoram, then extends along it nearly to Tringany. The North point of Pakango River, is a bluff headland, and bold to approach.

PULO BRALA, or CAPAS de MER, in lat. 4° 47′ N. lon. 103° 37′ E. by chronometer, distant about 6 or 6½ leagues off the main, is of considerable size, and may be seen 10 or 11 leagues: when it bears S. 8° W. its summit is flat, but appears in hummocks when bearing S. W. and Westward. There is a black rock, 1 or 2 miles distant from its southern extremity; and the islet Capas Laut with 2 or 3 rocks near it, lie about 2 leagues North from its northern extremity; which render a close approach to Pulo Brala, dangerous in the night. Betwixt this island and the coast opposite, about Pakango River, the soundings are irregular in some places, and the bottom rocky, or sandy; but in other places, regular soundings are found over a bottom of soft mud. The channel is wide and safe, by not borrowing under 11 or 10 fathoms toward the main, nor nearer to Pulo Brala than 19 or 20 fathoms. The depths outside of this island, are 34 and 35 fathoms to the N. E. and Eastward of it, at 4 and 5 leagues distance. Geo. site of Pulo Brala;

PULO CAPAS de TERRE, or CAPAS DANAT, in lat. 5° 15′ N. about 3½ leagues S. Eastward from Tringany Road, called sometime Little Capas, lies near the main, 12 or 13 leagues N. W. from Pulo Brala; it is rather low, and there is no safe channel for ships between it and the shore. Pulo Capas de Terre.

TRINGANY RIVER'S ENTRANCE, in lat. 5° 21′ N., lon. 103° 4′ E., bears about N. N. W. 12 or 13 leagues from Pakango River, and is a place of considerable trade, where pepper and sometimes a little gold is procured. Hitherto, ships have been in no danger of surprise from the inhabitants of this place, for the Rajah and the Government of Tringany, are more friendly to strangers than those of other Malay Ports. Water, provision, fruits, and vegetables, may be procured. The best anchorage for large ships, is in 7 fathoms, with the flagstaff S. W. by W., Redang Islands N. ¼ W. to N. N. W. ½ W., Pulo Capas de Terre S. E. ½ S. 3 or 4 leagues, about 2 or 2½ miles from the mouth of the river. Small ships, may anchor farther in shore, in 5 fathoms. The road of Tringany is considered safe from March to September, but it is prudent to leave it before the equinox, although the gales from N. Eastward seldom are experienced until after the 15th of October; these gales generally commence at westward, and veer round to N. E. Geo. site of Tringany.

REDANG ISLANDS, are mostly high, and form an extensive chain along the coast from lat. 5° 33′ N. to about lat. 6° 4′ N.; the channel betwixt them and the main is thought to be safe, with 12 to 9 fathoms water; but that between the innermost and the outer ones, has 16 and 17 fathoms in it, and better known. The Great Redang in about lat. 5° 50′ N. is high, of considerable extent, having a harbour fit for small vessels formed at its S. E. part, betwixt it and another contiguous island, in which the depths are from 2½ to 5 fathoms. The soundings in the channel betwixt the Great Redang Island and the main, are regular, deepening from the latter, to 17 fathoms sand and shells, with the Redang bearing from N. E. by N. to S. E. by E., distant 2 miles. Pulo Lantinga is 2½ or 3 leagues to the N. W. of Great Redang, and the soundings mid-channel between them are 23 and 24 fathoms; at 1½ mile from the N. E. side of Pulo Lantinga, the depth is 17 fathoms. Pulo Printian in lat. 6° 4′ N. distant about 6 or 7 leagues to the W. N. Westward of Great Redang, consists of 2 high islands, separated by a narrow gut at their southern extremities, but opening into a large bay to the northward. This bay is open to N. E. or Northerly winds, but well sheltered from the S. W. monsoon; the soundings decrease regularly from 15 fathoms at the entrance, to 5 and 4 fathoms close to the shores on each side, and to 6 fathoms close to a ridge of rocks at the bottom of the bay. Turtle are got in the sandy bay, on the N. E. side, and large scollops, which Captain Cheminant, (who went into this bay in 1789, with the Warren Hastings, in company with a fleet of Proas belonging to the Rajah of Tringany) Redang Islands and channels between them.

found to be very good refreshments. Off the N. E. part of the northernmost island, there are 4 small isles, 1 of them remarkable, by having a round bluff aspect.

Calantan and coast adjacent.

CALANTAN RIVER, in about lat. 6° 14′ N. and 8 or 9 leagues W. N. W., or N. W. by W. ½ W. from Pulo Printian, is under the government of Tringany, where ships sometimes touch to procure pepper; the bar of the river is shoal, and a number of sand banks lie inside, on which boats will ground. In the road at anchor, in 5¼ fathoms mud, the observed lat. 6° 18′ N.,* with the river bearing South, extremes of the coast from S. E. by E. ½ E. to Tanjong Datoo N. W. by W. ½ W. off shore about 3 miles. The coast from abreast of the Redang Islands to this place, may be borrowed on to 7 fathoms, soft regular soundings: from Calantan, it stretches westward into the Gulf of Siam, but is very imperfectly known beyond that place; for although formerly there was a considerable trade carried on betwixt Siam and various parts of India, it has been discontinued nearly for these last 20 years; and few ships have entered the gulf during this period, owing to the desolated state of the Kingdom of Siam, by frequent wars.

## *SAILING DIRECTIONS TO, and FROM SIAM: COAST of CAMBODIA; PULO OBY, PULO CONDORE, and adjacent ISLANDS, with SAILING DIRECTIONS.*

To sail from the southward to Siam in the S. W. monsoon.

COMING from the southward, bound to Siam in the S. W. monsoon, keep out in 24 or 25 fathoms after leaving Pulo Timoan until you pass Pulo Varela: or pass inside of these islands at discretion, if the weather be favorable. Afterward, steer along the coast inside of Pulo Brala, as the wind hangs sometimes far westerly; and proceed through the channel betwixt the outer and inner Redang Islands, keeping inside of the great I, then on the N. E. sides of Pulo Lantinga and Pulo Printian.

If you pass outside of the Redang Islands, haul in for the main after rounding them, and proceed along the coast at a moderate distance, which stretches between N. W. and W. N. W. to Cape Patani in about lat. 7° 4′ N. From Calantan to this place, the coast is low, forming several bays, with some contiguous islands; inland, the country is generally

Patani Cape,

hilly, or mountainous. In about lat. 7° 19′ N. and 14 leagues from Cape Patani, lies Pulo Lozin, an islet or rock,† which should not be approached in the S. W. monsoon, for it is advisable to keep within a moderate distance of the western coast; the soundings about 2 leagues inside of Pulo Lozin are 26 and 27 fathoms, decreasing regularly toward Cape Patani to 8 fathoms. Patani Bay, is to the westward of the Cape, and must not be approached on the eastern side, being very shoal; the anchorage is on the West side, where the bottom is soft. This was formerly a place of considerable trade,‡ but at present it is not frequented.

and Bay.

* This latitude was observed by Captain Benners of an American ship; but on the 3d of September, 1802, the Margaret anchored in ¼ less 5 fathoms in Calantan Road, with the River's mouth bearing W. by S., off shore 2 miles, the nearest of the Redang Islands, or Pulo Printian E. S. E., and observed in lat. 6° 11′ N.

† By the Formosas's Journal, it will be seen that 2 detached islets or rocks, exist in this place. "On the 8th of November, 1679, passed near 2 rocks, that lie E. ½ S. and W. ½ N. of each other distant about 8 miles, in lat. 7° 17′ N. which are not so far off shore, as placed in the charts, nor can they be seen above 4 miles from the deck, and the soundings about them are 26 to 28 fathoms mud. The island laid down for them goes by the name of Pulo *Cosyn*, but they are Pulo *Cosyn's*, in regard they are 2 very dangerous rocks."

‡ The Company's ship, Globe, anchored in Patani Road, in June, 1612, sailed for Siam in August, returned

From the West side of Patani Bay, steer along the coast in 12 or 14 fathoms, and preserve the same depths in passing the Large Island TANTALAM, which appears as part of the coast in coming from the eastward; but Ligor Bay, forms a deep concavity, on the West side of its northern extremity. Island Tantalam.

PULO CARA, in about lat. 8° 29′ N. and 7 or 7½ leagues to the eastward of the North point of the Island Tantalam, is formed of a group of 3 islands near each other; the northernmost and largest, has on the S. W. side a sandy bay, where there *is said* to be a run of fresh water. The southernmost is only a large rock, of white appearance when viewed from that direction, and about 2 cables' lengths from its southern extremity, there is a flat rock, near the water's edge. The channel inside of these islands is safe, having from 14 to 18 fathoms water about mid-way betwixt them and the N. E. end of Tantalam. Pulo Cara.

PULO CARNOM, bearing about N. N. W. distant 32 leagues from Pulo Cara, seems at first sight like 2 islands, the mountain that forms it having a low gap, only perceptible at a short distance. The soundings are 18 to 20 fathoms, steering in the fair track between these islands; before reaching Pulo Carnom, the LARCHIN Islands will be seen to the westward contiguous to the coast, consisting of a considerable group of small islands and rocks, and to the S. Eastward of them, the high land of Point Carnom. The passage is to the eastward of Pulo Carnom, which may be approached occasionally within 2 or 3 miles, in 10 to 12 fathoms water. Pulo Carnom. Larchin Islands.

PULO SANCORI, about 7 leagues N. W. by N. from Pulo Carnom, is nearly of equal height; and Pulo Bardia, about 8 leagues farther in the same direction, is also a high island adjacent to the main. These islands need not be approached, but from Pulo Carnom, steer a North course toward Cin Point, in about lat. 12° N., bearing nearly N. ½ E. from it about 40 leagues: the high mountains close over this point, make it visible at a great distance, and there are 2 small islands adjoining to the extreme point, which has a bay on each side. From abreast of the bay on the North side of the point, the coast extends about N. N. E., having good soundings at a moderate distance; there is no danger in coasting along, until the road of Pepery is approached, to the southward of which, a bank *is said* to project about 4 leagues from the shore, requiring the lead to be kept going. If you do not stop at Pepery Road, after passing the bank mentioned, steer N. E. by E. and E. N E. about 7 leagues, to anchor off Siam Bar, making proper allowance for the tides. Pulo Sancori and Pulo Bardia. Cin Point, &c.

MENAM, or SIAM RIVER, falls into the sea by several branches; the land that separates them is low, and cannot be seen above 3 leagues off, but it is a little more elevated at the eastern branch, by which it may be known. This is the best navigable channel, although the bar has on it, only 8 or 9 feet at low tide, and projects about 1½ league out from the entrance; there is 17 or 18 feet on it at high water spring tides, and 19 or 20 feet in September, October, and November, when the river inundates the low country by the rains. The entrance of the river is in lat. 13° 30′ N., about lon. 101° 15′ E., and the anchorage is to the southward of the Bar, about 3 or 4 leagues off, in any depth thought proper; under 3 fathoms, the bottom becomes hard toward the fishing stakes. Geo. site of Siam River and Bar.

JUTHIA, the principal city, is in lat. 14° 18′ N., about 24 leagues up the river; and the city of Bankok is about 10 leagues up, built upon an Island. The deepest water on the bar, is to bring the entrance of the river N. ¼ W., then steer direct for it, but a vessel in-

from thence in a passage of 8 days to Patani in November, where she remained during the N. E. monsoon; she sailed again in March 1613, for Siam, returned to Patani in September; and finally departed from the gulf of Siam, for Malacca strait, in October.

tending to proceed into the river, ought to procure a pilot. A little way inside, on the eastern bank, there is a fishing village and guard-house, where all vessels bound up the river land their guns, ammunition, &c. From hence, the navigation is very safe to Bankok, and the soundings regular from 6 to 9 fathoms mud.

Although Europeans have discontinued the trade with this place, owing to the impoverished state of the country, and the delay occasioned by being obliged to remain to retail their merchandise; there is still, however, a great trade carried on in large junks from Siam, to China, Cochin-China, and several of the Malay ports.

To sail from Siam, in the N. E. monsoon.

From Siam, ships bound to the southward, generally depart in the N. E. monsoon: if they sail for Malacca Strait before the middle of September, a tedious passage may be expected; and in such case, the coast ought to be kept aboard the whole of the way to the reef off Point Romania, in order to benefit by any favorable shifts of wind from the land, or to preserve anchorage in moderate depths, when winds and currents are adverse, which will often happen before October. When easterly winds blow strong, the current sets into the Gulf of Siam, along the western shore; at all other times, the freshes from the rivers produce an outset to S. E. or Eastward. And this current sets frequently from 20 to 30 miles per day to the eastward in the strength of the S. W. monsoon, when the entrance of the gulf is open.

Currents.

Cape Liant and eastern side of the Gulf, with sailing directions.

CAPE LIANT, in about lat. 12° 27′ N., distant 21 or 22 leagues S. by E. from Siam Bar, is a projecting headland on the East side of the gulf, having groups of islands on both sides of it, which are considered safe to approach; and the whole of the eastern coast, is fortified by an extensive chain, or groups of islands of various sizes. Cancao River, in about lat. 10° 5′ N. to the eastward of Pulo Way, was formerly a Chinese Colony, and a place of some trade.

Departing from Siam Bar in the N. E. monsoon, steer a course to pass near Cape Liant and the circumjacent islands, increasing the depth gradually to 15 or 16 fathoms; from abreast of the cape, steer about S. E. by S. for Pulo Way in lat. 9° 55′ N., which are high islands, safe to approach. Proceeding from Cape Liant, the depths regularly increase over a mud bottom, to 35 and 45 fathoms in sight of Pulo Way: if these islands are not seen when in their latitude, and the depth be from 45 to 50 fathoms, haul up E. S. Eastward to get a sight of Pulo Panjang, in about lat. 9° 5′ N.. to the westward of which, at 5 leagues distance, the depths are 28 or 30 fathoms. It is advisable to make this island, although Pulo Way has been previously seen, which is high, encompassed with several islets, and having brought it to bear about North, steer about S. by E. ½ E. for Pulo Aor, if bound to Malacca or Banca Straits. In case of a westerly current, the lead will be a sufficient guide to prevent getting near the coast, which ought not to be approached in this season to the northward of Pulo Brala; nor will it be advisable to see any land before making Pulo Timoan or Pulo Aor, unless you pass through any of the channels to the westward of these islands.

To sail from Siam, in the S. W. monsoon.

If you depart from Siam Bar in the S. W. monsoon, keep along the West side of the gulf, then work to the southward in the vicinity of the Malay Coast, if bound to the straits of Banca or Malacca. If bound to China, Cochin-China, or Manilla, steer to pass along the West coast of the gulf as far as Cin Point, then steer S. E. to get a sight of Pulo Panjang, attending to the currents, which generally set eastward in this season; if this island is not discernible when in its latitude, an easterly course may be steered, until it is seen.

Having passed Pulo Panjang, steer a S. E. course for Pulo Oby, distant from the former about 20 leagues, which ought be rounded on the South side at a moderate distance, on account of the ledge of rocks off it, having 17 fathoms water close to. From Pulo Panjang, in the track steering toward Pulo Oby, the water shoals from 25 to 19 and 18 fathoms near the latter; and on the N. W. side of this island, it shoals quickly from 15 to 5 fathoms, soft blue mud, mixed with gravel.

PULO OBY, in lat. 8° 25′ N., lon. 104° 54′ E. by chronometers, distant about 5 leagues nearly South, from the S. W. point of Cambodia, which bounds the entrance of Siam Gulf on the East side, is several miles in extent, and formed of different hills; but the mountain in the centre of the island, being higher than the other hills, may be discerned 15 or 16 leagues. There are a few families here, banished from the continent, who subsist on vegetables and maize, which they cultivate. A stream of fresh water issues from the top of the mountain, and descending on the North side of the island, empties itself into the sea at the landing place on that side, where a ship may conveniently fill 100 butts of water in a day; but the best anchorage during the S. W. monsoon, is on the East side of the island, opposite to a small bay, and to the northward of a small island that lies off the S. E. end of Pulo Oby. Exclusive of this small island, there is a Ledge of Rocks bearing E. S. E. ½ S. from the S. W. extremity of Pulo Oby, distant 3 or 4 miles, about 40 fathoms in length, and only the height of a ship's hull above water, with 17 fathoms within ½ a cable's length, and it is dangerous to approach in the night. Geo. site of Pulo Oby. Watering place;

PULO OBY FALSE, about 9 or 10 leagues to the N. N. W. of the former, and 5 or 6 leagues westward from the S. W. point of Cambodia, is a considerable isle, with some small ones around; and a reef projects from the S. E. end of the principal island. To the S. Eastward of the point of Cambodia, a shoal flat stretches out a great way from the coast, but there is a very safe channel with 6 to 8 or 9 fathoms, inside of Pulo Oby, and Pulo Oby False, betwixt them and the flat that fronts the coast. The tides are regular, and set strong East and West betwixt Pulo Oby and the main, except when obstructed by strong winds. In the dry season, there are junks employed carrying water from that island to the adjacent continent, where it is a scarce article at times. Pulo Oby False, and coast adjacent. Tides.

From Pulo Oby, if bound to Manilla, steer to pass on the South side of Pulo Condore, bearing E. ¾ N. from Pulo Oby, distant 109 miles, taking care in the night to give a proper birth to the Brothers, for the westernmost is a *Bare Rock*, not much elevated above water. From Pulo Condore, steer to pass on the South side of Pulo Sapata, and from this island N. E. until in lat. 12° N.; being then to the northward of the shoals, steer direct for Manilla Bay. Ships crossing from the Redang Islands toward the coast of Cambodia in March, ought to keep well to the eastward if possible; for the current sets to the westward about Pulo Oby, into the gulf of Siam during that month, and the winds prevail at East and E. N. Eastward. To sail from Pulo Oby to Manilla.

Ships coming from the southward, in the S. W. monsoon, and bound to Cambodia River, should endeavour to see Pulo Oby, or at least make the coast well to the westward; those bound to Cape St. James' Bay, at the entrance of Sai-Gon River, ought to pass on the West side of Pulo Condore, for the wind sometimes hangs far to the westward. In a direct line from Pulo Brala to Pulo Oby, the depths decrease from 35 fathoms, pretty regularly to 20 fathoms when the latter is bearing about North or N. N. W. 6 to 8 leagues. If Pulo Condore is approached from S. Westward, the depths will decrease to 19 or 18 fathoms when it bears about N. E., distant 20 leagues; afterward, 18 and 17 fathoms regular soundings will continue, steering close up to it on this bearing. To approach Cambodia River, and St. James' Bay, in the S. W. monsoon. Soundings.

After rounding Pulo Oby, if bound for Cambodia River, haul to the northward until near the coast, then proceed along it to the N. Eastward, keeping soundings from 8 to 10 fathoms. All the coast of Cambodia, from the S. W. point to the N. E. extremity, is very low land, inundated by the sea at times; and in most parts, the trees are just discerned nearly level with the water's edge, from the deck of a large ship, at the distance of 3½ or 4 leagues. The shoal banks which line the coast, project out 3 or 4 leagues from it in some places, having 2½ and 3 fathoms sand on them, and 6 to 7 fathoms near their edges. The soundings are very regular in the offing, and decrease gradually in depth, until the edges of the shore banks Coast of Cambodia, with sailing directions to the river.

are approached; then from 9 or 8 fathoms, the water shoals suddenly in some places;* the bottom near the edges of the banks, and also a considerable way to seaward, is mostly fine sand and ouze.

As the coast is very low, without any conspicuous marks, it becomes necessary for a vessel bound to Cambodia River, to borrow on the edges of the banks sometimes to 5, or even to 4 fathoms; but in doing so, great caution is requisite in a vessel of considerable burthen. Coasting along in 5 or 6 fathoms, the entrance of a river may be seen, where the trees appear higher than in other parts of the coast; from which Cambodia River bears about E. N. E. 20 or 22 leagues. Steering from hence N. N. Eastward in the direction of the coast, the mouth of another river will be discerned; and the coast there, takes an easterly direction as far as the river Cambodia.

As the coast here, is very low, destitute of any particular mark, it must be approached pretty close to observe its bearing, and when it changes from East to N. Eastward, the entrance of Cambodia River will be abreast.

Cambodia River and the adjoining coast.

CAMBODIA RIVER, disembogues into the sea by 3 principal branches; the westernmost being the proper one for ships, its entrance in about lat. 9° 34′ N., and 18 leagues N. by W. from Pulo Condore. The sands projecting a considerable way to seaward, render the navigation into the river difficult, particularly as they are liable to shift; it is therefore, prudent, to anchor in 4 or 5 fathoms outside, until a pilot can be procured, if you intend to proceed over the bar, the depth on which, is said to be 14 to 18 feet hard sand, at high water spring tides.† Cambodia city or town, is nearly 80 leagues up the river, the trade to which, has been long discontinued by Europeans, and since the country became subject to the government of Cochin-china, the trade of Cambodia has been transferred to Sai-Gon.

From the western branch of Cambodia River, the coast stretches N. Eastward to the next branch, which is narrow, and called the Eastern Channel; thence northward to the third branch, called the Japanese Channel, off which lies a small island called Crab Island. The coast about the mouths of Cambodia River, may be approached to 6 or 7 fathoms; the soundings are very regular, and a sufficient guide in the night, the bottom being uniformly soft. Betwixt Crab Island and Cape St. James', the coast continues low, forming a great concavity, with a shoal bank lining it, and projecting a great way out from the low islands which separate the different mouths of Sai-Gon River.

Geo. site of Pulo Condore;

PULO CONDORE (the centre) is in lat. 8° 40′ N., lon. 106° 42′ E. by mean of many observations: by chronometers, I made it 2° 7½′ East of Pulo Aor, and Captain Shepherdson, made it 7° 2′ West from Grand Ladrone by chronometer.‡ The principal island of the group, under this name, is about 3 leagues in length N. E. and S. W., from 2 to 4 miles in breadth, encompassed by several islands much smaller, which are mostly all high, and covered with trees. The large island is formed of a ridge of high mountains,§ and inhabited by people from Cambodia and Cochin-china, who continue tributary to that government; they reside in a village on the S. E. side of the island, where the Great Bay‖ is situated:

Great Bay,

* In the Anna, from China, working along this coast, in September, 1803, we had 9½ and 9 fathoms regular soundings for upward of an hour, steering W. N. W. and at noon observed in lat. 8° 58′ N. the entrance of a river visible from the poop bearing W. ¾ N. the low coast nearly level with the horizon from the deck, had then from 9 to 8 fathoms at a cast, the helm was immediately put down, and had 7½ fathoms in the stays.

† The company's ships, which traded to Cambodia in the 16th century, frequently got aground in the river, and it appears always to have been an intricate navigation for large ships.

‡ Lieut. Ross, in the company's surveying ship, Discovery, made Pulo Condore 2° 3′ East of Pulo Aor, and 7° 4½′ W. of Grand Ladrone by good chronometers.

§ The highest part of Pulo Condore is about 1800 feet above the level of the sea, by geometrical computations, for we saw it from the quarter deck of the Anna, when 50 miles distant, just visible above the horizon.

‖ The English settled, and built a fort here in 1702; and a few years afterward, were mostly all cut off in the night, by Maccassar soldiers in their employ.

This bay is fronted by several islands to the South and eastward, with soundings in it from 6 to 14 fathoms, but is rather exposed to easterly winds. There are 3 passages into it, that betwixt the South point of Condore and the small isles adjacent, is very narrow; that betwixt the East end of Condore and the islands opposite, has the deepest water; the other, fronting the bay on the S. E. side, is widest, with 4, 5, 6 and 7 fathoms water; and in entering it, the White Button and island on the N. E. side, should be approached, for there the deepest water is found. The village is on a plain at the bottom of the bay, and the inhabitants subsist chiefly on yams, pumpkins, fruits, and fish: the chief of the village has instructions from the King of Cochin-china, to furnish pilots to ships that touch there, and are bound to Cape St. James' Bay.

The harbour of Pulo Condore, is formed betwixt the West end of the principal island, and an adjoining high island, called sometimes Little Condore, the S. E. point of which nearly joins to the principal one, but they are separated about ½ a league to the northward, at which part is the entrance of the harbour: here, the depths are 10 and 9 fathoms mud, decreasing gradually to 5, 4 and 3 fathoms near the flat that occupies the bottom of the harbour, which is dry at low water. This harbour is well sheltered by the surrounding hills, and fresh water may be procured on the East side at a small bay, that on the western shore being brackish; the tide rises 3 or 4 feet, high water at 3 hours on full and change of the moon. On the North side of the entrance, there are some islands with a passage between the outermost and the others: near 1 league E. N. E. from the N. E. end of Pulo Condore, there is a barren white rock. These islands abound with timber, but there are no articles of trade to be procured: the soil being generally dry and unfruitful, the country unhealthy, and abounding with reptiles, there is no inducement for strangers to visit this place; consequently, few ships touch here. About 15 leagues S. E. from Pulo Condore, the variation was 1° 40′ Easterly in 1805, and it appears to be at present from 1° to 2° Easterly, all over the China Sea. and Harbour.

BROTHERS, are 2 small islands, about 2½ or 3 miles from each other, and are on the same line, bearing E. N. E. ¾ N. and opposite. The westernmost is a Barren Rock, (not more conspicuous than Pedro Branco at the entrance of Sincapour Strait) having high breakers on its eastern side, during blowing weather. The easternmost Brother is a high round islet, with trees on its summit, bearing W. by S. from the centre of Pulo Condore, distant 8 leagues. Brothers.

SOUNDINGS, in a direct line from the Brothers toward Pulo Oby, are mostly 14 and 15 fathoms, very regular; from 13 fathoms close to the Brothers on the inside, shoaling gradually toward the coast of Cambodia; 17 or 18 fathoms about 4 leagues outside of the Brothers; 13 and 12 fathoms within 2 miles of them on the East and N. E. sides, deepening to 17 fathoms close to Pulo Condore. When Pulo Condore bears N. by E. and North about 10 leagues, the soundings are 19 and 18 fathoms; when N. W. 7 or 8 leagues, 20 to 21 fathoms; West 12 leagues, 24 fathoms; West 20 leagues, 27 fathoms; and there seems to be soundings as far to the eastward, as to touch an imaginary line drawn from Pulo Sapata to the Natunas. Rounding Pulo Condore on the South and S. E. sides within 2 to 3 miles distance, we carried regularly 17 fathoms; at the same distance from the East end of it, had 18 fathoms. From 18 fathoms near the White Rock off the N. E. end of Pulo Condore, the soundings continue between 19 and 17 fathoms in a direct line to Cape St. James, until that headland is approached. From Pulo Condore steering direct for the Great Catwick, the depths increase very slowly until within 12 or 15 leagues of the latter, then rather quicker from 30 or 34, to 45 and 50 fathoms near the Catwick. Soundings around these islands.

Although the soundings are in general very regular around Pulo Condore, to a great distance in every direction, there appear to be, nevertheless, some coral banks to the N. East-

ward, in the track toward the coast of Tsiompa, and 1 to the southward, probably none of them are covered with less than 5 or 6 fathoms water.

Geo. site of Charlotte's Bank.

CHARLOTTE'S BANK, is the first of these, situated in lat. 7° 11′ North, lon. 107° 36′ East, or 54 miles East of Pulo Condore, by chronometer, which Captain Askwith, got upon in the Charlotte, on the 20th of September, 1807, returning from China to Bombay: they passed within 6 leagues of Pulo Condore, on the preceding day, and got upon the bank at 10 A. M.; the least water found on it was ¼ less 5 fathoms, coral rock, and 40 fathoms close to.

"Steering South, under close reefs, blowing a strong gale at W. S. W., at 10 A. M. coral rocks were perceived under the ship; the helm was immediately put a weather, to ware, and had ¼ less 5 fathoms with the deep sea lead, when before the wind. In coming to the wind on the other tack, there was so little water apparently under the bow, that I expected the ship would have struck in pitching: when round, had 8 fathoms; and from the fore-yard, a small spot appeared to the southward, with less water. From the poop, this coral bank appeared to extend about 2½ miles to the southward, and to the eastward 1½ mile; in standing to the N. W., deepened fast to 40 fathoms."

On the 15th of December, 1813, Lieut. Ross, remained 16 hours at anchor on this bank, while the boats were sounding over it, which was found to extend about 3 miles East and West, and 1½ mile North and South, broadest at the western part: the least depth found, was 6¼ fathoms, on the N. W. point, where the water is discoloured. The lat. of the bank observed at anchor was 7° 5′ 25″ N., lon. 107° 39′ E., or 3° 2¾′ East from the East point of Pulo Aor by chronometers. This bank will be avoided, by keeping under 30 fathoms water when passing its parallel. There is a bank of hard ground in lat. 7° 0′ N., lon. 107° 29′ E. by mean of 4 chronometers, on which Capt. F. Pellew, in H. M. S. Phæton had 12 and 14 fathoms, steering N. E. by N. 2 miles; probably the Charlotte's Bank.

Laurel's Banks.

LAUREL'S BANKS, 2 in number, were sounded upon by Captain Cheminant, in the ship Laurel, on his passage to China, in April, 1787; they had 9 fathoms coral rocks on the western part of 1 of these banks, which was the least water; 22 to 24 fathoms near its edge, and he made it in lat. 9° 30′ N. A few days before, they shoaled suddenly from 29 and 28, to 17 fathoms rocks on the N. W. edge of another bank, in lat. 9° 27′ N. computed from noon observation, probably part of the former bank. To the N. N. Westward of these banks, in about lat. 10° 4′ N. they shoaled suddenly from 21 and 20, to 13 and 12 fathoms rocks, upon another bank. As the weather was unfavorable, and the ship beating against a N. E. wind, the *true* situation of these banks could not be ascertained, but they lie S. Eastward from Cape St. James'; and it is possible, that the southernmost bank was the Royal Bishop's Shoal, as the latitude when the ship got upon it, *was not* correctly known.

Royal Bishop's Bank.

ROYAL BISHOP'S BANK, or SHOAL, is a rocky bank of considerable extent; the soundings near its edges are 32 and 34 fathoms to the S. E. and southward, 26 and 24 fathoms to the S. W., and 29 and 30 fathoms to the N. Westward: from 10 to 17 fathoms rocky bottom, are the common depths found upon it, and the least water is thought to be 7 or 8 fathoms. The Gunjavar got on it at noon in lat. 9° 48′ N. and 40½ miles West from Pulo Sapata, by chronometer; the Murad-Bux, was on its southern part in lat. 9° 40′ N. and 1° 39′ E. from Pulo Condore, by chronometer; so, it appears to be about 3 leagues in length North and South, and in lon. 108° 21½′ E. bearing W. S. W. from Pulo Sapata, distant 44 miles.

Geo. site.

It appears to have been upon the western edge of this bank, that the ship, Udney, got suddenly into shoal soundings at midnight, on the 8th of May, 1809, when bound from Bengal to Manilla. She was steering N. Eastward with a light easterly breeze, in soundings

from 24 to 26 fathoms, and from this depth (the lead being hove only once every hour) had 7 fathoms, tacked immediately, the ship just having steerage way; next cast had 11 fathoms, then 14 fathoms coral, soon after 27 and 28 fathoms. When she tacked in 7 fathoms, her situation by computation from the preceding and following noon observations, was in lat. 9° 47½′ N., lon. 108° 8′ E. by chronometer.

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## *SAILING DIRECTIONS for the COAST of TSIOMPA; DANGERS adjacent, PULO CEICER DE MER, PULO SAPATA, CATWICKS, and contiguous CHANNELS.*

CAPE ST. JAMES, in lat. 10° 16′ 41″ N., lon. 107° 4′ 15″ E., or 1° 58′ 15″ West* from Pulo Sapata by chronometers, bearing from Pulo Condore N. 14° E., distant 33 leagues, forms the eastern boundary of the bay and channel leading to Sai-Gon River. It is the first high land seen in coming from S. Westward, the whole of the coast from hence to the gulf of Siam, being very low drowned land: the mountain that forms the cape is intersected by low gaps, and appears like 3 islands when first seen at the distance of 10 or 11 leagues; but on a near approach, the low land that forms these divisions, is perceived. Geog. site of Cape St. James.

When bound to Cape St. James' Bay, in the S. W. monsoon, pass to the westward of Pulo Condore, having previously made allowance for a current setting out of the gulf of Siam, whilst crossing the entrance of that gulf. When the body of Pulo Condore is bearing about South, steer North, or N ½ W. if an easterly current prevail, which will soon bring you on the edge of the bank that fronts the mouths of Cambodia River, and extends to the entrance of Sai-Gon River. Steer then northward along the edge of the bank, keeping in 8 or 9, to 11 or 12 fathoms: if the water shoal under 7 or 8 fathoms, haul to the eastward, and it will immediately deepen, the soundings being regular on the edge of the bank. When Cape St. James' is approached within 6 or 7 miles, with the wind westerly, steer along the edge of the bank in 7 to 9 fathoms, until the cape bear about N. E. then stand for it, and keep within 1½ or 1 mile of the land, in proceeding to the anchorage in the bay. About 4 or 5 miles South from the pitch of the Cape, there is a Small Bank on which Captain Purefoy had 3 fathoms hard ground; the preceding track to the westward of it, has been recommended with a scant wind, to prevent getting to leeward of the cape. With a S. W. or Southerly wind, pass to the eastward of the Small Bank, by bringing the cape to bear N. N. W. when 3 or 4 leagues distant, and steer for it on that bearing; when it is approached, keep near the western shore of the cape, which is bold to, and safe to borrow upon, from the pitch of the cape to the low green valley with cocoa-nut trees, at the East part of the bay of Cape St. James'; here, ships may anchor in from 5½ to 7 fathoms good holding ground, with the village bearing E. S. E. The bottom in the channel is mud, but hard upon the edge of the bank that bounds its western side; the water also shoals suddenly on this bank in some places, it ought, therefore, not to be borrowed upon: with the cape E. by N. ½ N., and the village N. E. ½ E., there is a spot of 6 to 4 fathoms, irregular soundings. There is no good water to be got at the village; ships in want, must send to Gagneray River for it, round the point about 3½ miles to the northward. To approach it and sail into the bay. Anchorage.

Pilots may be got at the village, when ships intend to proceed up Sai-Gon River, the en- Sai-Gon River,

* Lieut. Ross made it in this position, by correct observations taken on shore; Capt. C. Mackintosh made it a few miles more easterly.

trance of which, is about 5 miles W. N. Westward from Gagneray Point: and it is an excellent river, with depth sufficient for ships of any description. The city of Sai-Gon is in lat. 10° 50′ N., lon. 106° 43′ E. where the King of Cochin-China has a foundry for casting cannon for his ships, &c.; this being his grand marine depot, where the vessels of war are built, the country abounding with timber, and mostly every necessary article for building. The Portuguese have carried on a constant trade from Macao to this place for many years; and recently, some English ships from Madras have traded to Cochin-China, without deriving much advantage thereby.

Geo. site of the city.

Cape St. James' Bay, is called Vung-tau by the natives; the tide here rises 8 feet perpendicular, and runs pretty strong on the springs, high water at 11 hours on full and change of the moon. Although the cape is steep on the West side, there is a small islet close to it on the S. E. side; and with the cape bearing between N. W. by W. and W. N. W. it should not be approached nearer than 2 or 3 miles, for there is 5 fathoms hard ground about 1 or 1¼ mile from it, with these bearings.

Cape Tiwoane and coast adjacent.

CAPE TIWOANE, bearing E. by N. ¾ N. from Cape St. James, distant about 13 miles, is high, and the termination of a chain of hills that stretches to the northward; the coast is low close to the sea, and in the middle of a flat sandy shore, betwixt these capes, lies the entrance of Cua-lop River, which stretches inland, and unites with Gagneray Bay, opposite to the entrance of Sai-Gon River. Cua-lop River is navigable only by boats or small vessels drawing 6 feet water. In passing along this part of the coast, do not come under 10 fathoms, for the water shoals suddenly to 6 fathoms sand, with Cape St. James W. by N. ¼ N., Cape Tiwoane N. E. ½ N. to N. E. ¾ N. distant 7 miles, and Point Bakeck N. E. by E. You may occasionally anchor on either side of Cape Tiwoane, in 7 fathoms water.

Point Bakeck and the bank fronting it,

POINT BAKECK, is of middling height, and bears from Cape Tiwoane about E. N. E. ½ N. distant 19 miles, the coast between them forming a considerable bay, in which there is a small river called Chitram; from the entrance of this river to Point Bakeck, a dangerous bank projects 4 or 5 miles from the shore, having only 2 or 3 fathoms on its southern edge in some places, and overfalls from 7 to 3 fathoms farther in, toward the shore. To avoid this bank, after passing Cape Tiwoane at 4 or 5 miles distance, steer about E. N. E. to keep 6 or 7 miles off shore, in soundings 9 to 11 fathoms, until Point Bakeck bear about North. There are some overfalls in this track, particularly near the edge of the bank, the water shoals suddenly over a hard bottom; but out in 10 or 11 fathoms, the bottom is generally soft, and the soundings pretty regular. When Point Bakeck bears N. by W. or N. by W. ½ W. about 6 miles distant, and being in 10 or 11 fathoms, steer N. E. for Cow Island, which bears from that point E. 37° N. distant 17 miles: it is a small round island in lat. 10° 39′ N., with trees upon its summit, and is safe to approach, the depths decreasing regularly toward it. On the East side of Point Bakeck, there is also good soundings.

with sailing directions.

Cow Island.

Britto's Bank;

BRITTO'S BANK,* extends several leagues parallel to this part of the coast, at the distance of 3 or 4 leagues off it, and 2½ leagues southward from Cow Island: the N. E. end of this bank is in about lat. 10° 32½′ N. and the mark for this part is, Cow Island bearing N. by W. on with the eastern summit of a remarkable mountain inland. The southern extremity is not well known, for ships passing outside, generally give it a good birth, and it is seldom discernible by those passing on either side, unless a strong gale prevail at the time, the depths on it being generally from 2 to 4 fathoms.

to sail on the outside of it,

To avoid Britto's Bank, on the outside, keep 5 leagues from the coast when abreast of the bank, and do not come under 17 fathoms; but at that distance from the coast, it will be

* On which a Portuguese Captain of that name was shipwrecked.

sometimes difficult to see land marks, to know when clear of the bank; therefore, vessels bound from Cape St. James Bay along the coast, or those approaching that bay from the eastward, may proceed through the inside channel, but persons unacquainted, ought only to do so, with proper precaution in day-light.

Having passed Point Bakeck at 6 miles distance, steer N. E. as before mentioned, to proceed inside of Britto's Bank; the best track is to keep in mid-channel, in soundings from 8 to 9 or 10 fathoms, and pass Cow Island at 3 to 5 miles distance. The depths decrease toward Cow Island and the main, to 7 and 6 fathoms; and from 9 fathoms in mid-channel, they increase to 12 and 14 fathoms near the edge of Britto's Bank, the latter depth being close to the rocks, where a ship might strike before another cast of the lead could be hove. and through the inner channel.

POINT KE-GA, in lat. 10° 41½′ N., lon. 108° 4′ E. bearing from Cow Island E. by N. about 11 or 12 miles, projects a long way out, by which a great bay is formed on each side: this point, resembles an island when viewed at a distance, being joined to the main by a low narrow causeway, formed of a rocky mass of singular appearance, which has the aspect of a city in ruins. The point is safe to approach, but it must be kept to the northward of East, in coming from Cow Island toward it, on account of a bank projecting from a village on this side. In the bay betwixt Point Bakeck and Point Ke-ga, the land is low and woody in some parts near the sea, with several small rivers: inland, the country is high, and the regular sloping mountain called TAICOU, in lat. 10° 45′ N., stands directly over Point Ke-ga, bearing from it N. W. ½ N., and the Point is formed by the foot of this beautiful mountain. Mount Taicou, is seen a great way to seaward, being the most conspicuous land in this part of the coast, and detached from any other high land. Geo. site of Point Ke-ga, the adjacent coast. Geo. site of Mount Taicou.

POINT VINAY, bearing from Point Ke-ga, N. E. ½ E., 19 miles distant, is encompassed by a small bank on the West side, inside of which, there is good anchorage in 5 fathoms, opposite to a fishing village in the small bay formed on the West side of the point. The Bay of Phuiay, is formed by the land trending northward from Point Ke-ga to Phuiay River, and from thence eastward to Point Vinay; abreast of this river, at a considerable distance from the shore, there is anchorage in 5 or 6 fathoms, and the entrance of the river may be known by an islet formed of a mass of rocks, that lie well out from it. Tiger Island, is separated from the shore on the East side of Point Vinay, only by a passage for small boats, being situated close to the point; although covered with birds' dung, it is not conspicuous, and only perceived when a ship is well in with the shore. The coast hereabout, is speckled with alternate patches of sand and verdure. Point Vinay. Tiger Island.

MUI-GUIO, or LITTLE CAPE, bearing N. E. ¾ E. from Point Vinay distant about 16 miles, forms the South point of the Bay of Phanry, and is known by a high steep *sand hill* close to the sea; between these points, the coast is moderately elevated and steep to seaward, having 10 and 11 fathoms water near it. From Mui-guio, the coast stretches nearly North to the entrance of Phanry River, and is of a reddish colour: a vessel may anchor in 6 fathoms about a league off shore, but the bar of the river is only navigable by boats, on the flood tide. This is a large fishing village, whose numerous boats* are seen fishing in the offing, sometimes at a considerable distance from the shore. Mui-Guio.

POINT LAGAN, situated in lat. 11° 9′ N., and bearing E. 16° N. from Mui-Guio, distant about 5 leagues, is a narrow and low neck of land, projecting a considerable way into the sea; on the West side, there is a small bay with a fishing village, where there is good Point Lagan.

* These boats, and others of Cochin-China, sail fast, and have great stability, being safe in a high sea; their sails are of a triangular form, constructed of light mats.

anchorage for small vessels. There is also a small village to the northward of Point Lagan, where vessels may anchor in 5 or 6 fathoms.

Geo. site of Pulo Ceicer de Terre,

PULO CEICER de TERRE, called HON-CAU by the natives, distant about 8 or 9 miles E. 30° N. from Point Lagan, is in lat. 11° 13′ N. lon. 108° 48′ E., or 4° 56′ West from Grand Ladrone, and 4° 13½′ East from Pulo Aor by chronometers; this is a low island extending nearly E. N. E. and W. S. W., having near its centre, a mass of rocks higher than the other parts, which is discernible about 5 leagues from the deck of a large ship. When first seen, it appears like a small peak or spire, and sometimes like a boat's sail; the whole of the island is rocky and barren, but a little grass or green moss, may be perceived on the flat part. The 2 low extremities of the island are encompassed with rocks, which project out above and below water to a considerable distance; there are also some rocks above water on the South side, but as the danger is generally visible, the island may be approached in the day within 2½ or 3 miles. In the night, it ought not to be approached so close, for then, the island cannot be perceived unless it be very near.

adjacent coast.

The coast behind this island, forms a deep and extensive bay, stretching from Point Lagan to the land of Cape Padaran, and the High Land of CEICER, to the N. W. and Northward of the island, is very mountainous close to the sea. Betwixt Pulo Ceicer de Terre and the N. E. side of the bay, opposite to the Gap of Padaran, lies the Bank of Breda, having 4 fathoms coral rocks on its eastern edge, and there is said to be much less water to the westward; it is not in the way of ships passing outside of Pulo Ceicer de Terre, unless with a working wind, they stand far into the bay betwixt that island and the land of Padaran. Inside of the island, there is a channel with soundings of 5, 6, and 7 fathoms, between it and the bank mentioned above, which is sometimes frequented by the native coasting vessels.

Bank of Breda.

Geo. site of Cape Padaran.

CAPE PADARAN, called MUI-DIN by the natives, in lat. 11° 21′ N. lon. 109° 0′ E. or 4° 44′ West from Grand Ladrone by chronometers, bears about N. E. ¾ E. from Pulo Ceicer de Terre, distant 5 leagues. It is a piece of high land, steep and convex to seaward, and forms the projecting part of the continent to the S. E. The high land of Padaran, is joined to the adjacent mountain of Ceicer by a neck of low level land, only visible when near the shore on the South side of the cape, but seldom seen at the distance which ships generally pass: this gives the land of Cape Padaran an isolated appearance when approached from S. Westward, and it has a similar aspect in coming from the northward. The neck of low land forms a very deep gap between the land of Padaran and the mountain to the westward, and this gap or chasm in the land, is generally called the GAP of PADARAN, and by the natives, CANA. It is very conspicuous at a great distance, and serves as a mark to avoid Holland's Bank, and to point out the direction of Pulo Ceicer de Terre, this island being on with the Gap bearing from N. by E. ¼ E. to N. by E. ½ E.

Gap in the land.

Soundings.

SOUNDINGS do not extend far out from Cape Padaran, it being a steep headland, bold to approach, having from 25 to 30 fathoms very near the shore: when it bore W. by N. ¼ N. distant 2 miles, and Pulo Ceicer de Terre W. by S. ¾ S., we had no ground at 40 fathoms; with the Cape N. by E. ¾ E., and Pulo Ceicer de Terre W. ¼ S., we had ground 25 fathoms, about 2 miles off the bluff land of Padaran. About half way betwixt the Cape and Pulo Ceicer de Terre, the depths begin to decrease, to 20, 17, and 14 fathoms irregular soundings, when within 4 or 5 miles of the island. The soundings about Pulo Ceicer de Terre, being in general irregular, are not always a sufficient guide in the night, to shew the proximity of the island; for although near it, the water shoals to 9, 8, or 7 fathoms, there are also overfalls from 17 to 10 and 8 fathoms in some places, at the distance of 2, 3, or 4 leagues to the southward of the island. When it bears North about 4 leagues, there are overfalls from 18 to 12 fathoms, and the depths are very irregular with it bearing between

North and N. by E.: the Althea got on a bank of 8, 7, and 6½ fathoms, with Ceicer de Terre bearing N. by E. ½ E. just in sight from the deck, and Point Lagan, N. by W. ¼ W. A little farther to the westward, the soundings become more regular, decreasing in depth gradually toward the coast, and increasing to 23 or 24 fathoms near Holland's Bank. The channel bounded by this bank in the offing, and by the coast of Pulo Ceicer de Terre on the inside, is 7 leagues wide; ships working through it in the night, ought not to stand farther out than 22 or 20 fathoms, for the depths close to the edge of Holland's Bank, are from 23 or 24, to 25 or 26 fathoms in some places.

HOLLAND'S BANK, extends in a N. E. and S. W. direction several leagues; the northern extremity is not well determined, but it is thought to be distant about 4 or 4½ leagues to the N. W. of the North end of Pulo Ceicer de Mer, and in lat. 10° 48′ N. This part of the bank is not known to be dangerous, for some ships which got upon it, had from 12 to 8 fathoms, irregular soundings and rocky bottom. After tacking in 11 fathoms near the coast a little to the westward of Point Lagan, we steered 7 leagues S. by E., increasing the depth to 26 fathoms at noon, then tacked, considering ourselves near the northern part of Holland's Bank, although no signs of shoal water could be perceived. When we tacked in 26 fathoms, our distance from Pulo Ceicer de Mer was about 5 leagues, the easternmost hill on it bearing S. E. ½ S., the westernmost hill S. E. ¾ S., and the islet that lies off its N. W. end, was a little open with the southern extreme, bearing S. E. by S. Southerly. Holland's Bank.

If Pulo Ceicer de Mer is not brought to the eastward of S. E. by S. or S. E. ½ S., it is probable that a ship would have no less than 7 or 8 fathoms, steering toward it with these bearings, in crossing the northern extremity of Holland's Bank. It is, however, well known, that the western part of this bank is very dangerous for large ships; particularly so, when the centre of Pulo Ceicer de Mer bears between E. by S. and E. S. E., about 7 leagues distant, and the *low part* of the island that *unites* the 2 hills, *just visible* from the deck of a large ship, the elevation of the eye being about 22 feet. The soundings close to this part of the bank, are 23 and 24 fathoms; and by standing on the edge of it, when under 20 fathoms, they decrease in a few cables' lengths, to 10, 6, and 3½ fathoms rocks, in several places. If, however, the lead be attended to, and hove quick, it will point out the edge of the bank, before a ship get into danger; and this seems to hold good, in the approach to the bank on both sides. dangerous.

The fleet from China, in January, 1805, by steering too much southerly from Cape Padaran, got on the western part of Holland's Bank, and the Canton, Glatton, and H. M. S. Grampus struck, although at a considerable distance from each other; the latter ship drawing 20 feet, struck hard several times, had 22 feet water by the lead, and was lifted over the rocky pyramids by the swell. These ships struck, in lat. 10° 38′ to 10° 42′ N., the Gap of Padaran bearing N. 16° E., the sand hill on Mui-guio about N. N. W., Mount Taicou about W. by N. ½ N., and the centre of Pulo Ceicer de Mer, E. by S. ¼ S. from the southernmost ship, and E. S. E. from the northernmost, distant 6½ or 7 leagues, the low part of that island which joins the 2 hills, plain in sight from the quarter deck.

To avoid the western part of Holland's Bank in clear weather, do not rise Pulo Ceicer de Mer more than to have the summits of the 2 hills visible from the poop of a large ship, when the island is bearing betwixt E. ½ S. and S. E.; for if the low part of the island between the hills, be in sight from the poop bearing from E. by S. to E. S. E., you will be near the edge of the bank. When Pulo Ceicer de Mer, is brought to bear to the southward of S. E. ½ S., it may be approached within 5 leagues, and the islet adjacent to it may then be seen from the deck. Directions to avoid it,

When bound to China, by the Inner Passage, steer from Pulo Aor to pass close on the East side of Pulo Condore; from thence, a N. E. by N. course will carry you outside of Britto's Bank, and in the fair channel between Holland's Bank and the coast, if there be no and to sail through the channel inside, and along the coast.

lateral current. The best guide in the night, is not to approach the coast under 17 or 18 fathoms until certain of being to the eastward of Britto's Bank, nor to deepen above 20 or 21 fathoms toward the western part of Holland's Bank; the fair track betwixt these banks, and between the latter and the coast, being from 17 to 20 fathoms, until irregular soundings are got in the channel to the southward of Pulo Ceicer de Terre, which have been described above.

Geo. site of Pulo Ceicer de Mer,

PULO CEICER DE MER, bears from Pulo Ceicer de Terre S. 7° E. distant 41 miles, its centre being in lat. 10° 32½′ N. lon. 108° 53′ E., and it is 4 or 5 miles in extent nearly N. E. and S. W. There are 2 small hills which form its extremities, 1 of them sloping, the other conical; and as these are discerned before the level land in the centre of the island, which unites the hills, they appear sometimes like separate islands when first seen in clear weather, about 8 or 8½ leagues distance from the deck of a large ship. Some rocks, with a reef, project about a mile from the North, and South-east parts of the island; and a rocky islet high above water, lies about 4 or 5 miles off its N. Western part, which may be seen at 5 leagues distance. This island is easy of access on the West side, where a ship may anchor occasionally; it is well cultivated and inhabited principally by fishermen, who pay an annual tribute in salt fish and birds' nests, to the King of Cochin-China. The soundings extend a very little way to the eastward of the island.

rocky islet near it,

and the contiguous channels.

The channel between Pulo Ceicer de Mer and Holland's Bank, is from 3 to 4 leagues wide, and appears to be safe: several ships in passing through it, have found the soundings irregular, from 12 to 9 and 8 fathoms rocky, when they borrowed on the edge of Holland's Bank; but on hauling toward the island, they always got into more regular depths of 18, 20, and 24 fathoms; the Milford had from 24 to 26 fathoms, in passing on the West side of the rocky islet, about 2 or 3 miles distance. The passage betwixt this islet and Pulo Ceicer de Mer seems also safe, for the American ship Devotion, went through it in 1803, and saw no appearance of danger. To the northward of the island, the depths increase to 35 fathoms, and decrease to 17 fathoms when it is just visible from the deck bearing about S. S. E.

Geo. site of Pulo Sapata;

PULO SAPATA, or SHOE ISLAND, bearing from the centre of Pulo Ceicer de Mer about S. 18° E., distant 33 miles, is in lat. 10° 1′ N., lon. 109° 2½′ E., or 4° 28′ E. of Pulo Aor, 4° 41½′ West of Grand Ladrone, and 22 miles West from Cape Varela on the coast of Cochin-China, by mean of many excellent chronometers.

It is the easternmost of the 3 islands that go by the name of Catwicks, and may be seen 10 leagues from the deck of a large ship; being apparently an high inaccessible barren rock, forming a receptacle for numerous birds. When viewed in some directions, it resembles a shoe, at other bearings it seems a large square column, and when bearing to the westward it assumes the form of a pyramid. Ships generally endeavour to make this island, or to pass within 6 or 8 leagues of the East side of it, in proceeding to, or from Manilla, or to China by the outer passage.

Little Catwick;

PYRAMID, or LITTLE CATWICK, situated about 2 miles N. W. by W. from Pulo Sapata, is a small barren rocky isle, terminating in a peak at the summit, and may be seen 7 or 8 leagues; it is encompassed by a reef, on which the sea breaks high in blowing weather, and although there may be a safe passage betwixt it and Pulo Sapata, by keeping nearest to the latter, it must be very narrow, and ought not to be attempted unless in a case of the *greatest* necessity.*

* There is reason to think, that the ships Seton and Surprise, went through this passage at midnight on the 8th of November, 1796; the Journal, states, that they were running 7 miles per hour under the *Goose-Wings* of their fore-sails, when Pulo Sapata was seen bearing S. by W. about 2 miles distant, and finding they could not

ROUND ISLAND, or GREAT CATWICK, in lat. 10° 6′ N. bearing W. N. W. ¼ N. from Pulo Sapata, distant about 3½ leagues, and nearly South from Pulo Ceicer de Mer, about 9 leagues, is a high barren island of a round convex form, nearly of the same size and height as Pulo Sapata, and may be seen about 9 leagues. The channel betwixt this island and Pulo Ceicer de Mer, is very spacious and safe, with soundings of 25 or 30 fathoms near the latter, deepening to 45 and 50 fathoms in mid-channel, and toward the Catwick: when through it, the depths decrease quickly in standing to the westward. Great Catwick; contiguous channels,

The channel betwixt the Great and Little Catwicks, may likewise be considered safe in day-light, but great caution is requisite when passing through it in the night, for exclusive of the reef environing the Little Catwick, another Danger is thought to lie nearly in the middle of this channel, the *true* situation of which is not known, notwithstanding many ships have passed through at various times. The French ship La Paix, in passing, saw breakers on a rock supposed to be near the water's edge, which she places to the eastward of the Great Catwick, at nearly equal distance from it and the Little Catwick. and dangers.

The Europe fleet from China, consisting of 9 sail, under convoy of H. M. S. Atheniene, saw the Great Catwick at midnight, on the 13th of March, 1805, and passed between it and the Little Catwick. Several of the ships, saw the latter and Pulo Sapata, and by their white appearance from the moon's light, mistook them for strange sails, and thought the Great Catwick was Pulo Sapata. In the Arniston, breakers were seen bearing E. ½ S., when the Great Catwick bore W. ½ N., *probably* about 3 or 4 miles; the Journal states, that the breakers appeared to roll over a rock about a ship's length, and were very high on the North end of it, but the rock was not visible: the breakers were on the beam when first discerned, and continued in sight until they bore N. E. There is cause to think, that this danger was not the reef which projects around the Little Catwick, for by the Journal it appears, that the Arniston was not near the last mentioned island, and it *is said*, that some ships of the fleet were to the eastward of her when the breakers were seen; if so, this must be the danger seen by the La Paix.

The Gunjavar, saw Pula Sapata bearing S. by W. about 2½ miles distant, at 7 A. M. on the 7th of January, 1804, she hauled to the westward to pass between the Great and Little Catwicks. "At 8 A. M. saw the Little Catwick bearing S. W., with breakers all round it, same time Pulo Sapata S. ¾ W. distant 2 or 2½ miles. When at ¼ past 8, Pulo Sapata bore S. E. ½ E., and the Little Catwick S. E. by S., saw the Great Catwick bearing W. ½ N., and very high breakers extending a long way from the N. E. side of it; bore away South and S. S. W. to go between them and the Little Catwick. When the Little Catwick was on with Pulo Sapata bearing S. E. by E. and the Great Catwick W. by N. ¼ N., had 21 fathoms water in mid-channel, which appeared to be about 4 miles wide; but the weather being thick, with rain, the distance may not be very correct: the reef that surrounds the Little Catwick, did not appear to extend far out. We had no observation for latitude, from leaving the Grand Ladrone until we made Pulo Aor."

By this extract, taken from the Gunjavar's Journal, it appears that she kept near the Little Catwick in passing through the channel: the breakers seen to the westward, are said to extend a long way from the N. E. side of the Great Catwick, but from the distance she was off, and the unfavorable state of the weather, it *seems probable* that they were detached a considerable way from the Great Catwick; and, as the island bore W. ½ N. from the Gunjavar, and also from the Arniston, when the breakers were abreast, there is reason to think, it was one and the same danger, seen from both ships, and that the passage between it and either of the Catwicks, is safe in day-light. The Great Catwick is thought to be steep

clear it to the eastward, they bore away and passed betwixt it and the Catwicks, having been obliged to steer various courses to avoid the dangers on each side. Notwithstanding the statement in the journal, it may be possible, that it was the channel betwixt the Great and Little Catwicks, which these ships passed through at so great a risk.

to, several ships *having apparently*, passed very near to the North and East sides of it in the night..

The Macclesfield, passed between the Great and Little Catwicks, on the 20th of November, 1721, and her Journal contains the following remark. "Saw some breakers lying about 2 miles N. E. from the Great Catwick, which I believe are not seen in little wind and smooth water."

H. M. S. Grampus, with 4 China ships, passed between the Catwicks on the 17 of October, 1810, having rounded the North end of the Great Catwick within a mile, when afterward at 11 A. M. a reef of breakers was seen from the Grampus between the Catwicks, bearing E. by S. apparently 2 miles in length, steered S. E. by S. between it and the Great Catwick: at ½ past 11 the breakers bore N. E. 1 mile, Great Catwick N. by W. ¾ W. 3 miles, Little Catwick E. by S. ¼ S. Lieutenant Ross, on the 30th of April, at 11¼ A. M. 1813, tacked with Pulo Sapata bearing S. 64° E., the Little Catwick then open ⅓ of a point with its North extreme, Great Catwick W. by N. 4 miles, when the *appearance* of breakers was seen bearing E. by N. distant 1½ mile.*

A REEF South Eastward of Pulo Sapata, is said to have been discovered by the Swedish ship Gottenburgh, in 1744, and that her boat had only 13 and 14 feet upon it, when the body of Pulo Sapata bore N. W. by W. distant 3 or 4 English miles, and deepened to 12 fathoms standing toward the island. The American ship Caledonia's Journal, states, that they passed close to a reef in November, 1802, on the North end of which the sea broke high when the swell rolled over it: they suppose, there is about 2 fathoms water on its shoalest part, that it will not be easily discerned in moderate weather, that it is 4 or 5 miles to the S. Eastward of Pulo Sapata, and that with the Catwick a little open from the S. W. end of the former, a ship will pass outside of the reef. These accounts would seem to prove the existence of a reef to the S. Eastward of Pulo Sapata, but many ships *apparently*, sail over the exact position assigned to it, without any appearance of shoal water being seen. Several navigators have thought indeed, that they saw the reef in passing, but their Journals are very discordant, both in its bearing and distance from Pulo Sapata, some placing it 3 miles, and others 3 leagues from that island. If it exists, probably it lies about 4 miles distant from Pulo Sapata, for the island is known to be steep to, on the S. E. side; the Hornby passed within a few cables' lengths of it in the night, and other ships have passed it on the S. E. side, at 1, 2, and 3, to 4 miles distance. A collision of currents or tides, is sometimes seen in the vicinity of these islands, producing ripplings in the sea, like breakers upon a shoal; which no doubt, may *probably* be marked sometimes as dangers. Ships, however, which pass within 5 or 6 miles of Pulo Sapata on the S. E. side, may keep a good look out, and endeavour to discover if a shoal *really* exists in that situation.

Soundings. SOUNDINGS deepen fast, in approaching Pulo Sapata and the Catwicks from the westward; in a direct line, about mid-way between them and Pulo Condore, the depths are 27 and 28 fathoms, increasing to 65 fathoms when Pulo Sapata bears about N. E. 12 or 13 leagues. When it bears about N. N. E. 9 leagues, the soundings are 67 to 70 fathoms, but not always regular; the edge of the bank coincides nearly with the meridian of Pulo Sapata, for very deep soundings only are obtained, a little way to the eastward of that limit. The depths increase to 110 and 120 fathoms, when Pulo Sapata bears N. W. by N. to N. W. ½ N., distant about 4 or 4½ leagues, and a little farther out, there are no more soundings; a

* It is much to be regretted, that the *true position*, and *real existence* of this supposed danger between the Catwicks, have not yet been determined, particularly at this time, but Lieutenant Ross remarks, that a high sea and unsettled weather prevented him from sending a boat to examine the place where the appearance of breakers was seen; he is, however, of opinion, that it is a real danger, bearing about E. ½ S. or East from the Great Catwick, nearly in mid-channel.

ship, therefore, being nearly in the parallel of this island, may be certain that she is to the eastward of it, when soundings are not obtained.

DOUBTFUL DANGERS hereabout, are, a rock said to lie to the westward of the Great Catwick, which probably has no existence. Middleburgh Shoal, said to bear S. 2° E. from Pulo Sapata about 19 leagues, in lat. 9° 3′ N. is also very doubtful; for several ships have crossed over the situation assigned to it, and saw no appearance of a shoal. Doubtful Dangers.

Andrada Rock, said to lie 22 leagues eastward of Pulo Sapata, seems to have no real existence. The American ship Lovely Lass, saw the appearance of it in lat. 9° 47′ N. lon. 110° 18′ E., but it was *probably* a drift from Cambodia River, which they mistook for a rock. This ship, passed also close to a small *white patch*, thought to be a sand bank, in lat. 6° 48′ N. on the meridian of North Natuna; but they might have been deceived, by a collection of fish-spawn, in a limit between contrary currents.

The Vigio, seen by the Fanny, on the 12th of September, 1803, is said to be a low extensive reef, with a tree on its western extremity, and a rock to the eastward. She passed it at 2 miles distance, and made it in lat. 11° 17′ N. and 1° 13′ E. from Pulo Sapata by chronometer, bearing N. 44° East from this island, distant 105 miles. I have passed within 2 miles of this danger, as shewn by the Fanny's chronometer, and although the day was clear, and our track correctly known by chronometers from Pulo Sapata, no appearance of a shoal was discerned from the mast head. Many ships, late in the season, steer N. E. ½ N. and N. E. from Pulo Sapata, without discovering any shoal, or apprehending danger to be near; but these courses ought to carry them directly over the Vigio, if it were in the position assigned it by the Fanny. Lieutenants Ross and Maughan, in their survey of the China sea, also searched in vain for the Vigio of the Fanny; which ship might probably have mistaken a large drift for a shoal. These officers, in exploring the dangers to the eastward of Pulo Sapata, have found none so near to it as the West London Shoal, which is situated upward of 60 leagues distance to the E. S. Eastward; those found on the parallel of the island, being at a greater distance.

## *COAST of COCHIN-CHINA, from CAPE PADARAN to CAPE TURON; DIRECTIONS for SAILING into the HARBOURS, and along the COAST.*

CAPE PADARAN, (described in the last section) is the southern boundary of the Great Bay of the same name, called also Phanran Bay, after a considerable town in the bottom of it, where there is a tolerable harbour, formed by a reef dry at low tide, that projects from the western shore about 2 miles, and shelters vessels from the sea. On the North side of Cape Padaran, there is a bight where vessels may anchor in the S. W. monsoon, with fresh water, at the South side of a small sandy bay: large ships ought not to anchor under 9 or 10 fathoms, for the bottom is foul near the shore. Padaran Bay.

The ship Admiral Gambier, sailed from Canton River on the 5th of September, 1812, reached Cape Varela on the 9th; meeting here with strong South and S. W. winds, and squally weather, she continued to beat against them near the coast till the 23d, then stood into Padaran Bay, where she anchored in 12 fathoms, with the East extremity of Cape Padaran, bearing S. S. E., northern extreme of the bay N. N. E., distant from the shore about Anchorage.

2 miles. She cut firewood, and filled up her water here, and sailed from this anchorage on the 26th of September.

To sail into the harbour.

After weighing from this anchorage, or having passed Cape Padaran, if bound to the harbour, steer for the middle of the bay, to avoid a reef and foul ground contiguous to the western shore; then keep to the northward, for the North point of the harbour's entrance, until the reef on the western side of it is plainly seen.

When near the entrance, a mass of rocks placed 1 over the other like ruins, will be perceived close to the shore at the N. W. side of the harbour, and beyond it, an isolated hill; keep the highest rock of the mass on with this hill, in steering past the reef at the distance of $\frac{1}{3}$ of a mile, 6 or 7 fathoms will be least water; and when inside of the reef, steer more westerly, and anchor in 4 fathoms, good holding ground. There is a rivulet at the bottom of the harbour, and a stream of fresh water, where the reef joins to the shore.

To proceed from the harbour, the directions which have been given for passing the reef, must be observed; when clear of it, avoid the North side of the bay, because it is rocky

North side of the bay.

ground; steer therefore, to the S. E. until the North point of the bay is brought to bear N. E. and pass it at the distance of 3 miles; this point is low, surrounded with rocks under water, close to which, there is a dry sand bank. From hence, to Cape Varela False, the coast is very mountainous and steep, extending nearly N. E. by N.; a little to the southward of that cape, there is an opening into VUNG-GANG, a great bason or cove, inhabited by fishermen, which is darkened by the steep surrounding mountains; but it is uncertain, whether or not this cove will admit ships, and afford safe anchorage.

Cape Varela False, and the adjacent coast.

CAPE VARELA, FALSE,* called MUI-DAVAICH by the natives, in lat. 11° 44′ N. bearing from Cape Padaran about N. N. E. $\frac{1}{2}$ E. $8\frac{1}{2}$ or 9 leagues, is formed by a very high *oblong mountain* of great magnitude, which from the steep cliffs that front the sea, rises with a gentle acclivity inland; and may be known from the other prominent head-lands, by its great height, convex outline, and by regularly sloping to seaward. In crossing the bay of Padaran, soundings of 40 to 50 fathoms may be got if not far out; the North point ought not to be approached under 40 fathoms in the night, because it is fronted by foul ground, and a small island lies a little way out from the shore.

Cape Varela False, forms the South point of the entrance to Camraigne Bay, which is steep to, and may be approached close, having 20 fathoms very near the shore; and betwixt the shore and the island that lies to the N. W., there is a narrow passage, with 12 to 14 fathoms water in it, fit for small vessels.

Camraigne Bay,

CAMRAIGNE BAY entrance, is in lat. 11° 49′ N., bounded on the South side by the land of Cape Varela False and the contiguous isles, and by the high island TAGNE on the North side; this is called the large entrance, in which there is from 18 to 14 fathoms water. The small entrance, is formed betwixt the North point of the island Tagne and the opposite point of the main, in which there are 7 and 8 fathoms water; but it is very narrow, and should not be used except in a case of necessity.

and harbours.

The OUTER HARBOUR of Camraigne, is to the N. W. of the island Tagne, having 10 and 12 fathoms water in it, and protected from the sea by that island. About $1\frac{1}{2}$ mile farther to the N. Westward, is the entrance to Camraigne INNER HARBOUR, about $\frac{3}{4}$ of a mile wide; formed by a point of land on the North side, and a long neck or narrow peninsula to the S. Westward. The inner harbour is an extensive lagoon, but the best anchorage is a little inside of the entrance, in any depth from 10 to 6 or 7 fathoms; for all the western part is very shoal, and the shores around the western and northern parts of the har-

* Named from a rock or nob upon the mountain, a little inland, having some resemblance to that over Cape Varela, although not near so conspicuous.

OF THE BOMBAY BRANCH OF THE ASIATIC

bour, are lined by a coral bank. From the northern extremity of the harbour, a river extends parallel to the coast 5 or 6 leagues; separated from the sea only by a narrow neck of land, consisting of small sand hills, and a great barren sandy plain.

The source of the river lies in marshy ground, not far from the city of Nhiatrang. There are no hidden dangers in either the outer or inner harbours, and they are safe for ships of any description, the bottom generally mud, and good holding ground. This harbour is mostly inhabited by fishermen.

Water Islands,

WATER ISLANDS, situated in lat. 12° 2′ to 12° 4′ N. are of moderate height, distant 3½ or 4 miles off the main land, to the northward of Camraigne Bay: the southernmost is called Hone Noi, the other Hone Ngoai, which is largest, with some islets and rocks near it. The channel inside of these islands is said to be very safe, with 12 fathoms water near the shore, and there is good anchorage opposite to them in the S. W. monsoon, close to the coast at the Great Plain; or the passage inside of these islands may be adopted, if you intend to proceed into Nhiatrang by the South entrance. The great sandy plain, is about 3 leagues in extent, ending at the South entrance of Nhiatrang Bay; at each extreme, there is a bluff point, and the bay comprehended between them, is called DGIAY BAY. It must be observed, that although the passage inside of the Water Islands is thought to be safe, there is a rocky patch to the N. W. of these islands in the fair track, on which the Lord Castlereagh shoaled suddenly, on the 18th of August, 1807. She had worked out of Nhiatrang Bay in the morning, betwixt Tree Island and the 2 islands near the shore, and observed at noon in lat. 12° 8′ N.; after steering South 4 miles with the wind at E. S. E., the water shoaled suddenly from 13 to 6½ fathoms, and the helm was put down; rocks and sea weed, were seen under the bottom, but the least water by the lead was 6½ fathoms, which deepened to 13 fathoms in standing about 2 cable's lengths to the N. Eastward. When upon this shoal patch, Hone Noi, the southernmost Water Island, bore S. E. ½ E., the bluff point at the northern extremity of Dgiay Bay N. W. ½ W., the bluff point at its southern extreme S. by E. easterly, distance of the sand downs on the shore of the bay 2½ or 3 miles. Inside of this rocky patch, there are 12 and 11 fathoms regular soundings.

and the opposite coast;

a rocky bank.

Nhiatrang Bay, with sailing directions.

NHIATRANG BAY, is large, covered by Tre Island and its adjoining isles to the southward, by the main land and Fisher's Islands to the northward and eastward. To proceed into the bay, by the South entrance, you may pass on either side of the Water Islands, then betwixt Tre Island and the 2 isles that lie nearly in the passage; the soundings are regular, from 12 fathoms at the entrance, to 6 and 7 fathoms between the West point of Tre Island and the main, where the channel is 1¼ or 1½ mile wide. The passage contiguous to the main, inside of the 2 isles that lie in the channel, is also safe; but that betwixt them and Tre Island is wider, and preferable.

The anchorage at Nhiatrang is in 8 fathoms good holding ground, with the entrance of the river bearing about N. W. or N. W. ½ N. 1 mile, and Tre Island E. S. E. The river has a bar, and will only admit vessels drawing 7 or 8 feet water; it communicates with Nhiatrang City, about 5 miles to the westward, which is the capital of the provinces, Nhiatrang and Binkang, and has a fort built in the European manner, by Monsr. Oliver, a French engineer. Here, they manufacture some silk, and other articles, and carry on trade with different parts of the coast; a ship in want of wood or water, will obtain the necessary refreshments, by touching at this place.

The Lord Castlereagh, on her passage from China, anchored on the 15th of August, 1807, in Nhiatrang Road, in 9 fathoms stiff clay, with the entrance of the river N. W. ¾ N., White Rock N. by E., Shala Island N. E. ½ E., Pyramid Island E. by N., Tre Island from E. ½ S. to S. E. ¼ S., and a ledge of rocks off it, bearing E. S. E. ¼ S. She watered with her own boats in the river, which was found very good a little inside of the entrance at low

water; and about 4 or 5 miles up, the water was fresh at ½ ebb. About 2 miles up the river, there is not depth sufficient for a loaded long boat at ½ ebb, there being several shoal banks that stretch across it. The rise of tide is 5 or 6 feet, high water at 8½ hours on full and change of the moon, and there is only *one* flood and *one* ebb in 24 hours. Tre Island in lat. 12° 16′ N. is high, and contains several coves, where vessels may repair their damages: the Upton Castle anchored to the westward of Tre Island, between the inner island and the main, to the southward of Nhiatrang Road, and found it good anchorage, and convenient for watering.

The northern channel leading to Nhiatrang Road is wide and safe, but there is thought to be a Coral Bank on the N. W. side, opposite to the large bay of Binkang, which makes it proper to keep nearest to Tre Island. There is a passage between the South point of Binkang Bay, and Turtle Island, which lies off it; and there is also a passage between the small isle Secke and the East point of the same bay; the coral bank mentioned above, is thought to lie nearly in a direct line betwixt these 2 islands.

Fisher's Island, and the contiguous channels.

FISHER'S ISLANDS, situated to the N. E. of Tre Island, form a group of 2 or 3 barren islands, with some rocks close to them; Pyramid Island, 1 of these, in about lat. 12° 21′ N., is a high, regular cone or pyramid, conspicuous as a mark in sailing along the coast. This island is about 1½ or 2 leagues to the southward of the northernmost 1, called Shala; and there is a channel with 25 to 30 fathoms water between them. The southernmost island is of moderate height, flat on the summit, like the crown of a hat, when viewed in some directions; the channel betwixt it and Tre Island is safe, and there are soundings of 60 to 75 fathoms about 3 or 4 leagues outside of these islands; the soundings inside of Pyramid Island, are from 16 to 20 fathoms, decreasing regularly close to the South side of the entrance of Hone Cohe Bay.

Hone Cohe Bay, and sailing directions.

HONE COHE BAY entrance, about 2½ or 3 leagues northward from Pyramid Island, has several islands in it; the outermost, called Bac, has to the eastward of it about 1 mile, a rock called the Button, and 3 islands to the westward. Betwixt Isle Bac and the small 1 to the westward, there is a safe passage, and also between the latter and the other 2 islands, which lie much nearer the western shore, but the widest channel is outside of Isle Bac, between it and the East point of the bay. Having passed these islands, if bound into the bay, steer to the N. W. in mid-channel betwixt the point on the West side that forms Hone Cohe Harbour, and a small island to the eastward; then steer westerly to round the point, afterward to the southward, and anchor on the West side of it in 4 fathoms good holding ground, sheltered all round; here, the village Hone Cohe, and some other habitations are situated.

On the East side of the bay, there are several islands at the entrance of a cove, into which ships may warp, and moor to the trees, there being plenty of water and no danger; but vessels do not go there, as the cove is inhabited only by a few fishermen. This cove or harbour, is formed by high mountains, and communicates with the sea by a passage called Cua-Be, (or Little Passage) to the S. Eastward, bounded on each side by high land, resembling steep perpendicular walls; but it is unknown, whether this passage is navigable, or otherwise. There are good soundings along the East side of the bay; to the northward and westward, it is extensive, but rocky and shoal near the shores; and in the middle of it, there are several islands. The tide rises 5 feet at Hone Cohe, high water at 11½ hours on full and change of the moon.

Three Kings.

THREE KINGS, are 3 rocks, situated about 1½ mile East of the point of Cua-be; they are bold to approach, having 30 fathoms water near them, with a passage betwixt them and the point. About 5 miles more to the northward, lies the small island Doi-Moi, at some views resembling a turret or centry box; the Point, from which it is separated by a

very narrow channel, is the easternmost land of Cochin-china, being a little to the eastward of the meridian of Cape Varela, and the land between them, forms a concavity called Honne Gomme Bay. The soundings in this bay are regular, and there is good anchorage in 8 or 10 fathoms sandy bottom, at the South side, about 2 miles to the W. N. W. of the point, and near to a small island: here, water may be got at the southern extremity of the sandy flat, but in the dry season, wells must be dug in the sand, at some distance from the sea. Fresh water may be procured in this manner, on most parts of the coast. The sandy flat, which extends from the high land of Cua-be, to that of Cape Varela, is a neck of land scarcely a mile broad in some places, separating the bottom of Hone Cohe Bay from the sea, and the 3 islands in the middle of that bay, may in passing, be perceived over the sandy flat.

Honne Gomme Bay, and adjoining coast.

ONG-RO HARBOUR, situated to the S. W. of Cape Varela, at the northern extremity of Honne Gomme Bay, is very safe at all times; it is about a mile wide at the entrance, stretching about 3 miles inland in a N. E. direction, with soundings of 8, 7, and 6 fathoms close to the village at the upper part of it. The bottom is all fine clay, except within 100 yards of the shore on either side, it is frequently sand or coral rocks: on the West side of the harbour, fresh water may be procured in several places, but the best watering place is about half way up on the same side, to the N. Eastward of a little cove. Pulo Varela, is a small island near the shore, to the S. W. of the entrance of the harbour; to proceed into the latter, bring the tunnel or peak, to bear N. N. W. and steer for it with this bearing, which will lead into the entrance of the harbour, where you will have 10 or 9½ fathoms water.

Ong-ro Harbour.

CAPE VARELA, or PAGODA CAPE, is formed of steep cliffs, extending nearly North and South 2 or 2½ miles, having in the middle of them, a small sandy bay, where a stream of excellent water descends from the mountains into the sea. This cape is in lat. 12° 55′ N., lon. 109° 24½′ E., or 14° 19½′ West from Grand Ladrone, by mean of a series of admeasurement with excellent chronometers at various times. The cape itself may be seen 9 or 10 leagues, and when first perceived in coming from the northward, appears like an island, the gap of low land which joins it to the mountain behind, being then depressed under the horizon. This mountain* stands directly over the cape, having upon its summit a large perpendicular rock, resembling a pagoda or chimney, called DA-BIA by the natives, which makes it very conspicuous; and it may be seen about 20 leagues distance from the deck of a large ship, either from the northward or southward, in clear weather; but the summits of the mountains are frequently obscured by clouds or vapours, particularly in the N. E. monsoon. The cape may be approached very close, there being 20 and 25 fathoms around it, at a small distance from the shore.

Geo. site of Cape Varela.

From abreast of Cape Varela False, the course is N. by E. ½ E. and N. by E., until Pyramid Island, and the other Fisher's Islands are passed, then N. ¼ E. and North to Cape Varela: the best track in the night, with a fair wind, is to keep from 2 to 3 leagues off the different headlands, which, with the Water Islands and Fisher's Islands, will be visible at that distance in passing along, if the weather be clear. When the weather is unfavorable, edge a little farther out, to give the islands a proper birth; and if soundings are obtained, you will not be far from them, or some of the headlands.

with sailing directions.

About 4 or 5 miles N. ½ W. from Cape Varela, lies a mass of rocks, some of them level with the water's edge; but the central 1 is considerably elevated, with a large stone on its summit, appearing as if placed by art: in passing near, a hole is perceived through below the upper stone when abreast, which has given it the name of PERFORATED ROCK. There is a safe passage betwixt it and the main land, having soundings of 20 to 25 fathoms.

Perforated Rock.

* There is a hot spring in the middle of the Cape Mountain, and there is said to be silver ore in some of these mountains, which form double and treble ridges behind the cape.

Phuyen Bay and the circumjacent coast.

PHUYEN BAY, is extensive, being formed by the land taking a westerly and N. W. direction from Cape Varela to Phuyen River, distant from it about 5 leagues, and afterward trending to the northward. About 6 or 6½ leagues N. Westward from Cape Varela, stands a high isolated mountain not far inland, being a regular cone, called CONICAL MOUNTAIN, or EPERVIER; and a little to the southward of it, there is a sloping piece of land with a rock or pagoda on it, which is only discerned when near the shore. Here, the inland mountains recede to the westward, a great way from the sea, and the *Cape Varela Chain* stretching also to the westward, a large space of low land is formed close to the sea around the bay of Phuyen, betwixt Cape Varela and Conical Mountain. The entrance of Phuyen River is to the southward of this mountain, and will only admit of boats. A ship may anchor off it in 8 or 9 fathoms good ground, with Conical Mountain bearing about N. N. W., and a pagoda on a mountain some distance inland N. W., but these mountains are frequently obscured by clouds. The soundings across the bay of Phuyen, are 30 to 35 fathoms, about 4 and 5 miles off shore. Several flat islands adjoin to the coast on the North side of the bay, of

Island Maignia.

which, MAIGNIA is the most considerable, distant about 2 miles from the shore, having an indifferent passage inside of it, of irregular depths and the bottom rocky; close to it on the outside, there are 23 and 24 fathoms water. Abreast of this island, there are on the coast, near the sea, 2 small hummocks, 1 of them resembling a sugar loaf.

Phuyen Harbour.

PHUYEN HARBOUR'S ENTRANCE, in lat. 13° 23′ N., is about 5 miles to the northward of the island Maignia, and 3½ leagues S. S. Westward from Pulo Cambir; it is about 2 miles wide, with 10 and 11 fathoms water on either side of the small island that lies a little inside, called Nest Island, which ought not to be approached close on the West side, because a reef projects about a musket shot in that direction.

This harbour, which is one of the best in the world, branches out into 3 harbours inside, distinguished by the names of XUAN-DAI, VUNG-LAM, and VUNG-CHAO. The anchorage of Xuan-dai is on the South side, in 7 or 8 fathoms sandy bottom, with the entrance of the river bearing South, and Nest Island about N. E. by E. That of Vung-Lam is about 2 miles more to the N. Westward, in 7 fathoms mud, on the North side of an island that fronts the cove, with the village bearing S. W. by W. Vung-Chao, about a league farther northward, on the East side of the great or inner harbour, is sheltered from every wind by circumjacent mountains, and the anchorage is in 4½ or 5 fathoms, with the houses in the grove of cocoa-nut trees bearing S. E. to S. E. by E. On the North side of the harbour, a coral reef lines the shore, which is visible at low water, and stretches all round the bottom of the inner harbour. In proceeding toward Vung-Chao, the Buoy Rock must be avoided, which is nearly even with the water's edge, and lies about ⅓ of a mile from the eastern shore, outside of the point that forms the East side of the entrance to the inner harbour. There is a small cove called VUNG-LA, under the North point of the outer entrance, where 2 or 3 vessels might be hove down, if requisite. The country around this excellent harbour, is well cultivated, and, together with the houses and huts interspersed along the hills, present in entering it, a beautiful landscape. The province of Phuyen, is better cultivated than any other in Cochin-china.

Gain-ba Point;

GAIN-BA POINT, is about a league to the northward of the entrance of Phuyen Harbour, where vessels may anchor occasionally in the small bays formed on each side of it; in the bay on the South side, there is a fishing village: this point, and the coast between it and the entrance of Phuyen Harbour, may be passed very close in 10 or 12 fathoms water. About a league to the northward of Gain-ba Point, lies another point, called Vung-Trich, and the point Vung-Mon, about 4 miles beyond the latter; these 2 points are also bold, and may be passed very close, in 10 or 12 fathoms. The bay of Vung-Mon, situated betwixt these points, is safe to approach, with regular soundings in it toward the shore.

COU-MONG HARBOUR'S ENTRANCE, situated on the South side of this bay, in lat. 13° 29′ N. is very narrow, with 7 and 8 fathoms in it, 5 and 4 fathoms a little inside, and 3 to 4 fathoms to the southward of the small island in the middle of the harbour. This is an excellent cove for small vessels, or those of middling size; and there is a little village among the cocoa-nut trees to the northward of the island. Vung-Mon Point, like that of Gain-ba, has a bay on each side, with a small fishing village in the northern 1: a vessel intending to anchor there, must give a birth to the northern extremity of the point, for rocks project from it above and under water, having 10 fathoms close to them; the anchorage is also in 10 fathoms. Cou-Mong Harbour;

PULO CAMBIR, in lat. 13° 33′ N., and 4 or 5 miles to the westward of the meridian of Cape Varela, has a regular sloping appearance, and may be discerned about 6 leagues from a ship's deck; it is of considerable size, extending N. N. W. and S. S. E., having a few fishermen's huts on the S. W. side, and at a small distance S. Eastward from its South end, there are some sharp peaked rocks, called the TWO PAPS. This island is nearly abreast of Vung-Mon Point, about 4 or 5 miles distant; and the channel betwixt it and the coast is very safe, with 12 and 13 fathoms near Vung-Mon Point, 20 fathoms toward Pulo Cambir, and outside of this island, at a small distance, there are no soundings. There is 23 fathoms with it bearing N. by W. 5 or 6 miles. Pulo Cambir;

DATE ISLAND, about 2 or 2½ leagues to the northward of Vung-Mon Point, and 1½ mile distant from the main, is of round form, covered with trees; betwixt it and another round island nearer the shore, there is a passage with 5 and 6 fathoms water; and there are some rocks above water, to the northward of the island last mentioned. From Vung-Mon Point, to opposite Date Island, the coast is steep and very mountainous; forming a considerable concavity, called Cambir Bay. Date Island, and the adjoining coast.

QUINHONE HARBOUR'S ENTRANCE, bearing about North 6 miles from Date Island, is bounded on the West side by a neck of sand about 4 miles long, and on the East side by high steep land. Close to the point on the East side, and within it, there is plenty of water; and the harbour is sheltered from southerly winds by the curved form of the high land on that side of the entrance, and protected by forts built on the point; but large ships are prevented from entering it, by a shoal bank that extends a long way out from the Western Point, then stretching across, joins to the land on the East side of the entrance, and forms a bar on which there is only 3 and 3½ fathoms water. The deepest water is close to the point on the East side of the entrance, where Captain Purefoy says, a ship may carry from 3½ to 4 fathoms on the bar, at high water spring tides: inside of it, the depth increases to 7, 8, and 10 fathoms. The western part, and bottom of the harbour, is a spacious lagoon, with very shoal water; several small rivers fall into it, one of which communicates with the city Quinhone, situated about 5 leagues to the westward, and is the capital of the province of the same name. This harbour was a place of considerable trade, prior to the long war between the King of Cochin-china, and his rebellious subjects. A ship may anchor outside of the bar in 4½ fathoms good holding ground, with the Sandy West Point just a little open with the East point of the entrance, if she intend to touch here, and not to go into the harbour. Quinhone Harbour with directions.

CAPE SAN-HO, in lat. 13° 44′ N., lon. 109° 14′ E., about 2½ or 3 miles East from the entrance of Quinhone Harbour, is a high bluff Head Land, forming the eastern point of the bay of Quinhone: close to the land, a little to the northward of the cape, there is an island called Hau by the natives; and the coast, which extends about 5 miles North from the cape, is very steep and high. Abreast of the North point of this high land, there are some small isles; one of them, called Cau, is a round islet, about 1 mile off the point; and nearly 1½ Geo. site of Cape San ho, coast and isles adjacent.

mile outside of this, there are some rocky islets named Hom-Cone and Hom-Co by the natives, and by Europeans, Black Jack. Between these and isle Cau, and also inside of the latter, vessels may occasionally pass, there being 15 and 20 fathoms water around them. On the North side of the point opposite to these islets, there is good anchorage in the S. W. monsoon, fronting a small bay formed by the point.

Course along the coast. From Cape Varela to Cape San-ho, the course is N. by W.; and N. ½ W. about 19 leagues, to pass outside of Black Jack, and the other islets that lie to the northward of the latter cape: soundings will not be got in this track, unless well in with the coast.

A little inland, there is a mount in the vicinity of Quinhone City, with a spire pagoda on it; farther to the northward, there is a mountain with a tower on its summit, and the tower is crowned with a small spire or funnel; the latter is in about lat. 14° 6′ N., and they are discernible when sailing along the coast at a considerable distance.

Buffalo, and adjoining coast. BUFFALO, in about lat. 14° 11′ N., and 4 or 5 miles distant from the high land abreast, is a convex rock of sloping form, moderately elevated, but will not be seen in the night until it is approached very close. It lies 5 or 6 leagues to the northward of the North point of the high land that forms Quinhone Harbour; from which point, the coast is low for some distance, and again becomes high, opposite to the Buffalo. The water is very deep outside of this rock, and the coast to the westward is bold and safe to approach, having soundings of 14 and 16 fathoms very near the shore. A fleet of ships from China, having no observations, got close to this part of the coast in the night; some of the ships passed outside of the Buffalo, others passed between it and the main, and found the channel safe, with regular soundings.

NUOC-NGOL, or Fresh Water Point, and Bay, lie about 3 leagues to the N. W. of the Buffalo; there is a small island nearly touching the point, on the South side of which is the bay, having a village close under the point; and there is good anchorage in 10 or 12 fathoms sandy bottom. Turtle Island. TURTLE ISLAND, about 3 or 4 leagues farther to the northward, and 4 miles off shore, is small, and very little above water; but there is a safe channel betwixt it and the coast. There are soundings of 65 or 70 fathoms, about 3 or 4 leagues off this part of the coast.

Tamquan River. TAMQUAN RIVER, lies to the N. W. of Turtle Island, in about lat. 14° 39′ N.* situated at the northern extremity of a sandy flat, having a bar at the entrance, passable only by boats at high water. The anchorage in 7 or 8 fathoms, is mud and sand, partly sheltered from northerly winds, by the coast stretching out about 2 miles eastward from the North side of the river. Tiphou River. TIPHOU RIVER, is a few miles more to the southward, in the middle of the sandy flat; the anchorage off this river, is in 7 or 8 fathoms sandy bottom.

From the Point of Tamquan, the coast extends North a little easterly about 2 leagues, then it takes a direction nearly N. W. by N. about 7 leagues, to Quan-ngai River; it is steep and bold to approach, having 30 fathoms within 2 or 3 miles of the shore; contiguous to the sea, the coast is of moderate height, but the country is very high inland. Coast from thence There is anchorage off Quan-ngai River: Cape Batangan, about 2 leagues to the N. E. of it, projects out to seaward, and forms a bay on the South side; on this side of the cape, about a mile distant, there are some rocks nearly even with the water's edge, called Rocky Island, betwixt which and the cape, the country vessels sometimes pass. to Bantam Cape. The coast from this cape to Bantam Cape, extends nearly N. W. about 4 leagues, having soundings of 20 and 25 fathoms near the shore.

* Another account places it in lat. 14° 32′ N. which may probably be nearest the truth.

PULO CANTON, called COLLAO-RAY by the natives, in lat. 15° 23′ N. lon. 109° 6′ E. or 4° 38′ West from Grand Ladrone by chronometers, is about 4 leagues distant from Cape Batangan, and the coast to which it lies opposite, a little to the northward of that cape. It is of considerable size, discernible about 9 leagues from the deck of a large ship, and has a level aspect when viewed from the southward: on the West side, it is inhabited, well cultivated, and fresh water may be procured here. A reef projects from the S. E. end of the island, and to the northward, there are overfalls and rocky bottom, extending from it and from the Low Island that lies to the N. W. of Pulo Canton about a league. The N. E. sides of these islands should not be closely approached, for although it is not known that danger exists, overfalls of 15 to 7 fathoms have been experienced about 2 or 3 leagues to the northward of Pulo Canton. When it bears S. S. E. 4 leagues, there is 50 fathoms water. Geo. site of Pulo Canton, island and channel contiguous.

The channel betwixt the island and the main is very safe, with soundings of 25 to 34 fathoms; within 2 or 3 miles of the main, the depths are generally about 30 fathoms, decreasing to 25 fathoms toward Pulo Canton; the low island to the northward, should not be approached.

It may be proper to observe in this place, that ships which adopt the inner passage to China during the strength of the S. W. monsoon, in June, July, and August, ought not to edge off from the coast of Cochin-China, until they pass within sight of Pulo Canton, particularly if the winds are light and baffling; and in such case, it is advisable to steer well to the North, toward the South part of Hainan, to prevent being driven near the N. Western extremity of the Paracels, should a N. Westerly storm happen to blow from the Gulf of Tonking, which has been frequently experienced in June and July. To sail along the coast in the S. W. monsoon.

PORT QUI-QUICK, bearing about W. by N. from Pulo Canton, is a considerable bay formed on the West side of Cape Bantam, close to the foot of high mountains; it is about 2 leagues wide, and 1½ league deep, with some islets in it, and small creeks where fresh water may be procured; and it affords good anchorage in the S. W. monsoon. At the N. Western extremity of the bay, there is a small bay or cove under Happoix Point, said to afford shelter in the N. E. monsoon; opposite to it, Happoix River may be discerned, which extends a great way inland. Port Qui-quick, and the coast around.

From Happoix Point, the coast extends near N. W. by N. about 15 leagues to Cape Turon, and in this space, the country is mountainous, a little inland. About 4 leagues northward from Happoix Point, lies the island CHAM-COLLAO ***FALSE***, which is about 4 leagues off the coast, of considerable height, and a reef is said to project from its southern extremity. Cham Collao False.

CHAM-CALLAO, in lat. 15° 54′ N., about 5 leagues to the N. Westward of the former, and 3 leagues distant from the main, is a high island about 2 leagues in length N. N. W. and S. S. E., having some islets adjoining its South end, and others projecting to the westward from its N. W. part. It is inhabited, well cultivated, and the anchorage on the West side, in 4 or 4½ fathoms near the village, may be considered a safe harbour in all winds. The channel betwixt these islands and the main, is safe, with soundings mostly from 6 to 8 fathoms; and in some parts 5 fathoms, to the westward of Cham Collao. Opposite to this island, lies the entrance of Fai-fo River, which by a narrow arm of the sea, communicates with Turon Bay; near Fai-fo River's entrance there is a mass of marble rocks, very conspicuous when sailing near the coast. Cham Collao and contiguous channel. Fai-fo.

CAPE TURON,* or TIEN-TCHU in lat. 16° 5′ N. lon. 108° 15′ E. by chronometers Geo. site of Cape Turon.

* The description of the coast of Cochin-China, from Cape St. James' to Turon Cape and Bay, is partly taken from Monsieur Dayot's excellent survey, (which Mr. Drummond kindly allowed me to have translated from the French original, in his possession, at Canton, in 1804,) and partly from my own observations made in 8 voyages, sailing along the coast.

the bay and contiguous land.

and lunar observations, is the easternmost extremity of the peninsula that forms the East side of Turon Bay; and Collao-hanne, or Turon Island in lat. 16° 11′ N. lies close to the point of land that forms the N. W. side of its entrance. The entrance of Turon Bay, is about 4 or 5 miles wide, with regular soundings 15 and 14 fathoms, decreasing inside to 8, 7, and 6 fathoms. The northern shore of the peninsula ought not to be approached very close, for a reef on which the sea sometimes breaks, projects out about ¾ of a mile from the third point; the inner point of the peninsula, is also joined to a small contiguous island by a shoal. This small island is in lat. 16° 2½′ N., and the common anchorage is on the South side of it and the point, in 5 or 5½ fathoms, where ships are sheltered from all winds. This is an excellent harbour, affording plenty of poultry and other refreshments, from the adjacent villages; several rivers fall into the bay, and the depths decrease regularly toward the circumjacent shores, but Turon River and Sandy Isle at the eastern side of the bay, are lined by a shoal bank. This, was formerly a great place of trade, and some European nations had factories here; but no trade has been carried on by Europeans to this port for a considerable time past. The peninsula, and Turon Island, are both high; and the country inland, is generally high and mountainous. The soundings about 2 or 3 miles outside of Cape Turon, are 24 to 25 fathoms, the same depths are got about 2 or 2½ leagues to the N. Eastward of the island, abreast of the entrance of the Bay; and the bottom is generally mud or ouze.

Approaching Turon from southward, the mass of marble rocks appears insulated, resembling a castle; a few miles to the northward of which, the Cape Peninsula is perceived with 2 peaked hills on it, 1 of them much higher than the other, and united by a low narrow isthmus: having approached the Cape Peninsula, steer round it at a moderate distance, into the harbour. Turon Bay, is called Han-san by the natives.

## *GULF of TONKING, and the ISLAND HAINAN, with SAILING DIRECTIONS.*

Cape Chouvay.

CAPE CHOUVAY, or CHOUMAY, in lat. 16° 21′ N., bearing N. W. by W. 9 leagues from Cape Turon, has good anchorage in a small bay on the West side, where there is a river; and a little farther to the N. W., there are other rivers: the coast between these 2 capes forms a bight, and a river falls into it.

Hue River.

HUE, or HUE-FO RIVER, in about lat. 16° 35′ N., distant 9 leagues N. W. by W. from Cape Chouvay, has good anchorage off it in 6 fathoms mud, and upon the bar there is about 2 fathoms at low water. The city Hue, about 4 or 5 leagues up the river, was formerly the residence of the King of Cochin-China; when the northern provinces rebelled, it became the seat of the rebel government, but has again, with these provinces been re-taken by that King, who sometimes resides in it at the present time. About 6 leagues northward of the entrance of Hue River, lies Tiger Island, in about lat. 16° 55′ N. which is high and small. There are regular soundings along this part of the coast, the bottom mostly blue mud, or

Tiger Island.

mud and sand; about 6 or 7 leagues to the N. W. of Tiger Island, the soundings are 30 to 34 fathoms; and they reach from thence, across the entrance of the gulf, to the West part of Hainan.

Tonking Gulf;

TONKING, or TUNG-QUIN GULF, is bounded at the entrance, by the S. W. end of Hainan on the North side, and on the South side by Cape Chouvay and the coast about

Hue River, for this river is generally considered as the boundary betwixt the coast of Cochin-China and that of Tonking. The gulf is about 35 leagues wide, having several islands contiguous to the western shore, and at the bottom of it, numerous small islands and some shoals. There are soundings all over it, 45 and 40 fathoms in the middle, decreasing toward either shore; the bottom is generally soft, and proper for anchorage. In some parts, the soundings appear to be irregular, for the Rolla* in lat. 17° 25′ N., to the northward of Tiger Island, shoaled from 35 and 30 fathoms mud, to 10 fathoms on a bank, steering W. by S.; and soon deepened again to 25 and 30 fathoms, steering W. by N.

Two considerable islands, amongst several others near the shore in the bottom of the gulf, are marks for 2 principal branches of Tonking River. One of these called Rockbo, falls into the N. W. part of the gulf in about lat. 20° 6′ N. which has been frequented by the Chinese and Siamese vessels; although there is thought to be only 12 feet water in the channel, at the entrance, soft mud: about a league westward from it, and 2 miles off shore, lies Fisher's Island, of moderate height and small, which is a mark for the river.

The other branch, or principal river, called Domea, from the first considerable town on its banks, falls into the gulf about 20 leagues N. Eastward of the former, in about lat. 20° 50′ N. Between these rivers, there are many dangerous shoals, projecting 2 leagues from the shore; and the whole coast of the gulf, to the peninsula of Lui-chew-fu, which bounds it on the East side, is fronted by shoals and reefs, some of them projecting a great way out from the main land.

The bar of the principal river, is composed of hard sand, liable to shift with the tides, which renders a pilot necessary, when a ship intends to proceed into the river; 1 may be got from the village Batsha, situated at the mouth of the river, by firing a gun, and making the signal. The mark to approach the river, is to steer for a mountain inland called the Elephant, bearing about N. W. by W., and when Pearl Island, which is small, situated on the eastern side of the road, is brought to bear about N. N. E. 1 league distant, it will be proper to anchor in 6 to 8 fathoms and wait for a pilot; the bar will then be distant 2 or 3 miles. The Formosa, on the 13th of July, 1680, anchored in 8 fathoms sand, Tiger's Hook N. N. E., the Alcoran N. ½ E., Pearl Island N. N. E. ½ E., and the Elephant N. W. by N. which was the best anchorage at that time. The Bar, and to approach the anchorage.

Inside of the bar, the depths increase over soft bottom, and the river which is above a mile in breadth at the mouth, becomes more contracted farther up. Cachao, the capital city of Tonking, is about 28 leagues up the river. European ships traded to this river upward of 140 years ago, but this trade has been discontinued for a long period, and the knowledge of the navigation of this gulf, having not been carefully recorded, is now *almost* lost to Europeans; and it will probably continue so, unless trade should revive, and be an inducement for ships to return to this place: the foregoing remarks for this gulf, and for the rivers, ought therefore, not be relied on implicitly.

If bound to Tonking in the S. W. monsoon, keep along the coast of Cochin-China to Cape Chouvay, or to Tiger Island, from thence, steer to the N. W. and N. N. W., giving a proper birth to the West Coast of Hainan; the lead will shew the approach to it, by the quick decrease in depth when near its contiguous banks, which should not be borrowed on under 16 or 20 fathoms. Having reached lat. 19° N. and in 28 or 30 fathoms, if the Island

* This ship bound from Canton to England with teas, on account of the Company, made a dangerous and singular mistake. She lett the Grand Ladrone on the 6th of February, 1804, steered for the inner passage, saw Pulo Canton bearing S. by W. 6 or 7 leagues on the 9th, which they mistook for an Island of the Paracels. Afterward, she stood to the northward in the night, and to the westward in the day, endeavouring *to force* a passage through amongst, or to round the northern limit of the Paracels; but was always obstructed by a chain of islands and shoals. At last, on the 16th they observed in lat. 17° 28′ N., had regular soundings for 2 days in the entrance of the Gulf of Tonking; shortly after, saw Tiger Island bearing S. E., and having tried for 7 days *to force* a passage *through the Paracels*, they found that it was the main land they had mistaken for those dangers; consequently, steered to the S. Eastward along the coast.

Hainan has not been seen, a N. by W. course ought to be steered to make the Norway Islands, which are of middling height; the southernmost said to be in lat. 20° 35′ N., about 13 leagues E. S. Eastward of the Bar of Tonking River; but the course steered, and the approach to the river, must be governed by the tides or currents, which are frequently found to set out of the gulf. On the bar, there is only about 6 feet water at low tide, when they rise and fall most; and 12 feet at low water, when there is little rise and fall; at high water, there is in the former case, 24 or 26 feet upon it, and only 14 or 16 feet in the latter case.*

Leaving the bar in the N. E. monsoon, steer between S. E. and S. E. by E., which will bring you in sight of Hainan, the N. W. part of which must be avoided, by not coming under 20 fathoms toward the sands, said to stretch out 6 or 7 leagues. Easterly winds prevail often in the gulf during the N. E. monsoon, when outside in the open sea the winds are blowing at the same time from N. Eastward.

Hainan.

HAINAN, or HAI-NAM, bounding the gulf of Tonking to the S. E. and Eastward, extends about 55 leagues, in a N. E. and S. W. direction, and is about 25 leagues in breadth. It is in most parts, very high uneven land when viewed from seaward; but inland there are many level districts, cultivated with rice, sugar-cane, areka, or bettle-nut trees, and tobacco. These cultivated plains, are separated from each other by lofty mountains, covered with impenetrable forests, through which the natives have cut narrow passes in the most accessible parts, to enable them to go from 1 district to the other. The island is subject to the Chinese, who hold all the places of profit or of consequence, keeping the inoffensive aborigines in a state of abject poverty.

The N. W. coast is little known to Europeans; some shoal banks are said to extend 6 or 7 leagues from the West part of it, which may be approached to 16 or 18 fathoms, or to 15 fathoms in some places, the soundings being regular toward them.

The South and S. E. coasts, are bold to approach, with soundings generally from 25 to 35 fathoms very near, or close to the headlands, deepening to 65 or 70 fathoms about 5 leagues off; and in some places, these soundings extend 6 or 7 leagues off shore.

The South coast, is indented with several fine bays, affording good anchorage, and shelter from the N. E. monsoon, each of which may be considered a safe harbour during that monsoon, but they are partly open to southerly winds.

Yait-chew Bay.

YAIT-CHEW BAY, situated at the western extremity of the island in lat. 18° 24′ N., has some islets in it, and moderate depths for anchorage, but exposed to southerly and S. W. winds; it is the westernmost bay on the South side of the island. A little way up the river which falls into the bay, stands the fortified town of Yait-chew, with a citadel or fort to the westward: the governor of the island, frequently resides here, it being 1 of the chief towns.

* In the entrance of Tonking River, there is but 1 flood and ebb in 24 hours; and when the moon is near the equator, twice every month, there is little or no tide, being then dead neaps. With the moon's declination the tides increase, and when she is in the tropical signs they rise most; only with this difference, that when the moon has North declination, the tide flows when she is above the earth, and ebbs when she is under the horizon, making high water at setting, and low water at the rising moon: whereas, the moon having South declination, makes high water at her rising, and low water at her setting, the tide then flowing when she is under, and ebbing when she is above the horizon.

The tides are highest in the easterly monsoon, for the current which then sets along the coast of China to the westward, is impelled by the strength of the wind through the channels on both sides of Hainan, producing an accumulation of water in the gulf; whereas, the N. W. and Westerly winds, which greatly prevail about this gulf in the other monsoon, tend to force the water out of it to the southward.

At many of the eastern islands, in the Indian Seas, there is only 1 flood and 1 ebb during 24 hours, which seem to be dependant on the moon's declination, as at Tonking, although not observed by navigators. At the Island Baseelan, near Mindanao, where the Anna's long boat went into Maloza River 3 times for water, we found only 1 flood in 24 hours, high water at the rising moon.

In Canton River, although there are 2 tides in 24 hours, they are influenced greatly by the moon's declination; their height at times, apparently, depending on that, nearly as much as on her conjunction with, or opposition to the sun.

SY-CHEW BAY, situated a little to the eastward of the former, is exposed to South and West winds; a little inland, there is a hill with a pagoda or funnel upon it. Sy-chew Bay.

SAMA, or SAMOY BAY, the next to the eastward, distant 8 or 9 leagues from Yait-chew Bay, has several islets and rocks in it, with anchorage inside of them for small vessels. A considerable river falls into the N. E. part of the bay, with a small fort at its entrance; and Sama Town, the residence of a mandarin, stands near its western bank. Sama Bay.

YU-LIN-KAN BAY, separated from that of Sama, by a long narrow point of land, has 22 fathoms soft bottom in the entrance, and from 11 to 7 fathoms at the proper anchoring place in the N. E. arm of the bay, where ships are sheltered in every direction, except between South and W. S. W. Several ships which were driven from the coast of China by Ty-foongs at the beginning of the N. E. monsoon, have been known to take shelter in this bay, until the monsoon was expended: there is fresh water to the northward of an islet, on the eastern shore of the bay. To the northward of the anchorage there is a passage into an *inner harbour*, where small vessels are sheltered from all winds, and where a large ship may go if necessary. Rocky or Foul Point, forming the East side of the entrance, is surrounded by a rocky reef, but the Sandy Point on the West side, has 4 fathoms within less than a ship's length; betwixt these points, the entrance of the harbour is not above $\frac{1}{4}$ mile wide, and considerably contracted by the reef projecting from Rocky Point. To the southward of Sandy Point, a reef projects out a considerable way from the western shore, which requires care in steering for the entrance. A ship may warp in, if the weather is fine; or with a southerly or easterly wind she may sail in, by keeping nearest to the eastern shore until nearly abreast of Rocky Point, then steer over for the Sandy Point, and round it at a small distance. The best time to enter the harbour, is at low water, the dangers being more conspicuous, and 5 or $5\frac{1}{2}$ fathoms will be the smallest depth in the fair channel; having rounded Sandy Point, and shut it in with the land on the East side of the outer bay, a ship should anchor in $5\frac{1}{2}$ or 6 fathoms, within a small $\frac{1}{2}$ mile of the shore near Sandy Point, and examine the bottom around with boats, prior to mooring. Yu-lin-kan Bay; Directions to proceed into the Harbour.

GALONG BAY, is separated from that of Yu-lin-kan, by a piece of high land about 2 leagues broad, which forms the southern extremity of Hainan, and its most prominent part is in lat 18° 11′ N. lon. 109° 20′ E. by lunar observations. This bay is about 5 miles wide, and 4 miles in depth, having 2 round islands called the Brothers in the entrance, and 1 near the middle of the upper part of the bay, called St. Peter's, or Middle Island; in the N. W. part, there are some rocks above and under water, and the bottom along the western side of the bay is generally foul. With a leading wind, the bay may be entered by any of the 3 channels; that between the East Brother and the eastern shore, has from 15 to 18 fathoms coarse sandy bottom, and as a reef projects from the N. E. end of the Brother, it is prudent to keep in mid-channel, or rather nearest to the main. The channel between the Brothers is very safe, the depths in it from 16 to 19 fathoms blue clay; but the western channel is the most convenient with a working wind, being about a league wide, with soundings of 18 and 20 fathoms from the West Brother, until close to the S. W. point of the bay: inside, the depths are from 15 to 11 fathoms, good anchoring ground. A little way outside of the Brothers, the depths increase to 35 and 40 fathoms. Geo. site of the South point of Hainan. Directions for sailing into Galong Bay.

Ships wintering in this bay during the N. E. monsoon, moor in 7 or 8 fathoms dark sand and mud, at the N. E. part, with the village Galong bearing E. by S. about a mile; and a reef that lines the South side of the little bay contiguous to the village, must have a birth in mooring. Here, ships are sheltered from all winds, by the circumjacent high land, except those that blow between South and S. W. which force a considerable swell into the bay. One large ship might moor *under fours*, close on the North side of Middle Island, or several

small vessels might be sheltered there, from all winds. Northward from the common anchorage, there is a white sandy beach, and a rocky part of the shore separates it from the small bay to the eastward; on the N. W. side of these rocks, fresh water is procured from a small run, that terminates in a pool close to the beach. The tide rises here, about 4 or 5 feet.

The fishermen will ask 80 or 100 dollars to carry a ship into this bay, but there is no occasion for a pilot; after entering it by either channel, work or sail up between Middle Island and the East side of the bay, which are safe to approach, and anchor opposite to the village. Small bullocks are got here, at 7 or 8 dollars each; rice, sweet potatoes, and some other vegetables, may be procured for dollars; also fish and some poultry.*

Lieong-soy Bay, and adjacent coast.

LIEONG-SOY, or TONG-SOY BAY, about 8 or 9 leagues N. Eastward of Galong Bay, is a large open anchorage; but sheltered from N. E. and northerly winds, by anchoring well in toward the East side of the bay in 7 or 8 fathoms, with the rocky point of Lieong-soy bearing to the E. S. Eastward, off which a reef projects some distance. At the North part of the bay, there is an inlet to a lagoon, near which stands Lieong-soy town, the residence of a mandarin. Ton-kieou is another considerable town farther to the westward, with a bay, and some islands, and rocks fronting it: a river descends from the town into the North part of this bay, and a serpentine inlet from the West side of it, leads into a lake, where the country around is well cultivated, and forms a beautiful plain, separated from the land that forms Galong Bay by a chain of mountains.

The land to the eastward of Lieong-soy Bay, is high, rocky, and barren, with 36 fathoms water within 2 or 3 miles of the shore.

Sail Rock, and the coast to the N. E.

TIENG-FONG, or SAIL ROCK, in about lat. 18° 29′ N., and 3 or 4 leagues E. N. Eastward of the eastern part of the land that forms Lieong-soy Bay, is a rugged peaked rock, appearing like a Chinese junk in some views: the depths about 3 miles outside of it, are 35 to 38 fathoms; and there is a channel with 10 to 13 fathoms between it and the shore, from which it is distant 4 or 5 miles. From this rock, to the island Tinhosa, the distance is about 10 leagues N. E. by E., and there are 3 islands near the shore in this space, with 12 and 14 fathoms water close to them. Inside of the easternmost of these islands, lies the town of Manchow, and near the coast abreast of the westernmost, there is a ridge of high land with 3 peaks on it, the centre 1 most pointed and a little higher than the others: this lies near the sea, and at a considerable distance, is sometimes mistaken for Tinhosa Island. Farther inland, in about lat. 18° 56′ N., there is a high mountain of similar appearance to the former, but more elevated; it was seen bearing W. S. W. nearly 30 leagues distant, then forming in 3 peaks or sugar loaves.

In moderate weather, sailing along this coast, bamboes may frequently be seen standing erect above the surface of the sea; they are the buoys of drift nets, which the fishermen place sometimes a great way from the land, to catch flying fish.

Geo. site of Tinhosa, and its harbour.

TINHOSA ISLAND, is in lat. 18° 46′ N., lon. 110° 29′ E., or 3° 15′ W. from Grand Ladrone by chronometers; and in 1803, I made it 1° 4½′ E. from Cape Varela by mean of 3 chronometers. It is of considerable extent, with steep cliffs fronting the sea, and a peak or hill on its N. W. part, which slopes down to the eastward; it is just discernible at 11 leagues distance from the poop.

The West side of the island being of a concave form, with soundings of 8 to 10 fathoms

* Several ships have wintered in this bay at various times. Having been disabled by a Ty-foong, in the Gunjavar, on the 24th of September, 1786, we were obliged to take shelter under Hainan, and remained in Galong Bay until the 1st of April following; we walked inland at discretion, and found the natives very inoffensive. The island abounds with wood fit for fuel, but none of the timber seems durable, or proper for ship building.

betwixt it and the Hainan shore, good shelter may be found against all winds, excepting those which blow from South, or S. Westward; it therefore, forms a good harbour in the N. E. monsoon; the entrance to it is 2 miles wide, betwixt the S. W. point of the island and the opposite shore. The Valentine took shelter here, after being driven from her anchors close to the Grand Ladrone, early in October, 1763, and sailed in March following for Macao. Tinhosa, is steep to, on the outside; when passing it about a mile distant, we had 35 fathoms soft ground, and about 3 or 4 miles to the eastward of it, 60 and 65 fathoms.

Tinhosa False.

TINHOSA FALSE, in about lat. 19° 3′ N., and 6 leagues N. N. Eastward from Tinhosa, is an island of small extent, and middling height; and when viewed from the southward, has a rock like a pillar at its eastern extremity.

coast from hence northward.

From Tinhosa False, the coast extends N. by E. and N. N. E. about 10 or 11 leagues to the high land of TONGEON; in this extent, the land contiguous to the sea is mostly low and level, covered with trees, but far inland, the country is mountainous. The low part of the coast should not be approached under 15 fathoms in passing along, for our Chinese pilot asserted, that the bottom is foul and rocky under that depth. To the northward of this low land, the coast becomes again high, and safe to approach: the high land projects out a little to the eastward, and from lat. 19° 43′ N. stretches northward, forming HAINAN HEAD, the N. Eastern extremity of the island, in lat. 20° 0′ N., lon. 110° 54′ E. The northern coast from hence, taking a westerly direction, an intricate channel is formed betwixt it and the peninsula of Lui-chew-fu; this channel is little known to Europeans, but the Hainan fishermen say, it is not very safe for large ships, being lined by sands and breakers. The East side of the peninsula of Lui-chew-fu, is thought to be fronted by sands extending from the N. E. part of Hainan a great way to the northward, and projecting well out to seaward. This bight between the North end of Hainan and Tien-pak is very little known, but the Prince of Wales, from Port Jackson bound to Canton, fell to leeward in January, 1797, and had from 12 to 14 fathoms within 2 miles of the breakers on these shoals, with the North end of Hainan bearing from S. W. to W. by S.

Geo. site of Hainan Head.

North coast of Hainan.

Kiong-chew-fu, on the North side of Hainan, contiguous to the channel and shoals, is a considerable town, where the Junks from China come to trade, and it is said to be a good harbour.

Geo. site of the Taya Islands, inside channel.

TAYA ISLANDS, separated from the high land of Hainan Head, by a safe channel 4 or 5 leagues wide, are a group of high barren islands, 6 or 7 in number, (with some rocks) which may be seen about 8 leagues from the deck; and the pilots say, there is a safe passage between some of them. They extend N. E. by N. and S. W. by S. about 6 leagues, the northernmost being in lat. 19° 56′ N., lon. 111° 10′ E.; or 2° 34′ West from Grand Ladrone, by chronometers. The southernmost island, in about lat. 19° 39′ N. seems the largest, from which a high sand bank stretches to the N. N. Eastward several miles, having regular soundings, 20 and 21 fathoms about 3 miles from it on the East side. When these islands bear W. by S. distant 7 leagues, the depth is 45 fathoms; when they bear N. by W. about the same distance, it is 48 fathoms; and soundings extend on the parallel of the northernmost island, as far eastward as the meridian of the Grand Ladrone: the Warley had 36 fathoms in lat. 20° 25′ N., with these islands bearing South, having been driven to the westward in a Ty-foong, on the 24th of September, 1803.

The depths in the channel betwixt these islands and Hainan Head, are from 10 to 17 fathoms; and there is in the western part of the channel, adjacent to Hainan, a high peaked island, called Feou-kieou.

# *PARACELS, and the BANKS or DANGERS in the NORTHERN PART of the CHINA SEA.*

General description of the Paracels.

PARACELS, delineated formerly as a ***continued large bank***, interspersed with groups of large and small islands, extending North and South from lat. 12° to about 16½° or 17° N., with the nearest part of it, within 15 to 20 leagues of the coast of Cochin-china. Other shoals and islands, called Amphitrite, Lincoln, &c. were placed nearly 3° farther to the eastward, with a wide space between them and the former bank; but it is now certain, that all these dangers form only *one* archipelago, consisting of shoals and low isles, not far separated. This will be seen by the following description of them, taken from the survey made by Lieuts. Ross and Maughan, of the Bombay Marine.

North Shoal.

NORTH SHOAL, extending E. by N. and W. by S. about 2 leagues, is narrow and steep to, having soundings only on the North side, 14 fathoms within ½ a cable's length of

Geo. site.

the rocks: the East end of this shoal or reef, is in lat. 17° 6′ N., lon. 111° 32½′ E., and it appears to be the N. Westernmost danger of the Paracels.

Amphitrite.

AMPHITRITE, is formed of 5 low, narrow, islands, connected by a reef of rocks that projects 2 or 3 miles beyond their extremes; and upon the westernmost island there is a

Geo. site.

cocoa-nut tree. The western extremity of this danger is in lat. 16° 59′ N., lon. 112° 12′ E., and it extends about 4 leagues E. S. E., the eastern extremity being in lat. 16° 54′ N., lon. 112° 23′ E.; it forms the northern limit of danger, in this part of the Archipelago.

There are no soundings on the North side, but good anchorage in 10 fathoms sand, is got under the S. E. side of the chain, about ½ a mile from the rocks: no fresh water is procurable.

Geo. site of Woody,

WOODY ISLAND, in lat. 16° 50′ N., lon. 112° 18′ E, is about 3 miles in circumference, covered with small trees, and has a spring of very good water on its western side, near some cocoa-nut trees. A reef projects around this island to the distance of ¾ of a mile, connected with Rocky Island.

and Rocky Islands.

ROCKY ISLAND, in lat. 16° 52′ N., lon. 112° 20′ E. is small, and nearly of the same height as Woody Island; there are no soundings to the N. E. or eastward of it, but irregular soundings extend 6 miles to the S. Westward of these islands, decreasing to 14 fathoms in some places. Close to the reef on the West side of Woody Island, there is 25 fathoms; and the depths decrease gradually from 30, to 15 fathoms toward the Amphitrite, where a vessel may anchor, if requisite.

Geo. site of Lincoln Island,

LINCOLN ISLAND, in lat. 16° 40′ N., lon. 112° 42′ E., is about 3 miles in circuit, enveloped with a reef to the distance of a mile; it is low, covered with small brush wood, and has a spring of excellent water, near to 3 cocoa-nut trees in its centre. There is 20 fathoms close to the rocks at the South and West sides, and the soundings appear to extend about 2 miles off, but the water is deep on the East side. This is the easternmost island of the Paracels.

and Pyramid Rock.

PYRAMID ROCK, in lat. 16° 36′ N., lon. 112° 37′ E., about 6 miles to the S. W. of Lincoln Island, has no soundings close to; but the pilot said, that soundings were continued in a narrow line, from the South part of Lincoln Island to the shoal seen by the ship Bombay Merchant, in 1800.

BOMBAY'S SHOAL, in lat. 16° 0′ to 16° 6′ N., lon. 112° 26′ to 112° 38′ E. by lunar observations and chronometers, is a reef of breakers of oblong form, about 4 leagues in extent E. by N. and W. by S., having an entrance apparently at the West part, with deep water inside: some of the rocks are level with the water, and have sandy patches on the inside of them. This shoal is steep to, for at ¾ mile off the South side, the Bombay had no ground with 100 fathoms line; and close around it, Lieut. Ross in his survey, got no ground. It seems to bear about South from Pyramid Rock, for although the Bombay, by chronometer, made it several miles more easterly than the longitude stated above from the *survey* of Lieut. Ross, it probably is not so; because the Jehangire observed at noon, October 25th, 1806, in lat. 16° 5′ N., lon. 112° 52′ E. by good chronometer, and no danger could be discerned from the mast head. On the following day this ship got upon a CORAL BANK, in lat. 16° 18′ N., lon. 112° 35′ E., and had 12, 10, and 9½ fathoms; next cast 30, and in less than an hour had no ground, drifting to the S. Eastward by the lead, being calm at the time. This seems to corroborate with the account of the pilot mentioned above, that there are soundings on *coral banks*, in a line between Lincoln Island and the Bombay's Shoal; which, with those dangers, form the eastern boundary of the Paracels.

Geo. site of the Bombay's Shoal.

Geo. site of Jehanghire's Bank.

CRESCENT CHAIN, of islands and reefs, called (by Lieut. Ross) Money's, Robert's, Pattle's, Drummond's, and Governor Duncan's Islands, extends from lat. 16° 27′ to 16° 32′ N., and from lon. 111° 29′ to 111° 44′ E. They consist of 6 low sandy islands, connected by reefs, stretching nearly East and West in the form of a crescent; at the East end of which, an elbow is formed, by part of the reef turning round to the S. Westward; on this part, stands Governor Duncan's Islands, 2 in number, with an opening of 4 miles wide, betwixt their contiguous reef and that projecting around Money's Island which forms the western extreme. This opening is on the South side of the Chain, and inside there are soundings; but the ground is chiefly coral, with great overfalls from 25 to 5 fathoms. The best anchorage is close to the reef, on the North side of Governor Duncan's Islands, where there are some broad patches of sandy bottom. Betwixt Governor Duncan's Islands, and Drummond's Island, which lies next them to the eastward, there is a narrow passage with soundings of 14 and 12 fathoms, but it ought not to be attempted in a large vessel. On the South sides of these 3 islands, no soundings are obtained.

Geo. site of the Crescent Chain.

OBSERVATION BANK, in lat. 16° 35′ N., lon. 111° 40½′ E. is small, situated on the North side of the Crescent Chain last mentioned; and may be considered as part of it.

Geo. site of Observation Bank.

DISCOVERY SHOAL, or REEF, extends from the West end, in lat. 16° 11′ N., lon. 111° 32½′ E., about E. by N. 5¼ leagues, its eastern extremity being in lat. 16° 16′ N., lon. 111° 46½′ E. This long and dangerous reef, is of the shape of an extended oval, with an opening of 1 cable's length on its South side, having in it overfalls from 2 to 20 fathoms; and there is a small opening on the North side. There are no soundings about 20 yards from the reef, and scarcely 2 fathoms water over any part of it, with many spiral rocks a few feet above the water's edge. The Huinan boats come here to fish, from January to May.

Geo. site of Discovery Shoal.

VULADOR'S SHOAL, extending E. by N. and W. by S. 7 miles, has a few small spiral rocks above water, with high breakers, and no soundings at the distance of a cable's length on either side. Lieut. Ross in his survey, makes the centre of this shoal in lat 16° 18′ N., lon. 112° 2′ E.; the Portuguese Snow, Vulador, in her passage from Macao to Manilla, saw it on the 21st of July, 1807, and by chronometer made it in lat. 16° 19′ N., lon. 112° 5′ E., bearing S. 15° W. from Amphitrite Islands, distant 39 miles. She had passed to the westward of these islands on the preceding day, and in steering to the southward, had no soundings, nor did she see any other shoal, but that which has been named after her.

Vulador's Shoal.

Geo. site.

Geo. site of Passoo Keah.

PASSOO KEAH, in lat. 16° 2′ N., lon. 111° 45′ E., is a small sandy island to the southward of the Discovery Shoal, surrounded by a coral reef, having no soundings near it.

Geo. site of Triton's Island.

TRITON'S ISLAND, or BANK, in lat. 15° 46′ N., lon. 111° 11′ E. by chronometers, extends in a N. W. and S. E. direction about 3 or 4 miles, according to a plan of it sent to me by Captain Brown, of the Triton: the North part is a sandy lump about 20 feet high, sloping down in a low point to the S. Eastward, with high breakers projecting out a great way in that direction; another reef projects from its N. W. end, and, like the preceding dangers, there is no soundings near it.

This is thought to be the southernmost and westernmost danger of the Paracels, and it bears from Pulo Canton, which is the nearest land of Cochin-china, E. 11° N., distant 122 miles.

Coral patches lately discovered.

In June 1815, Lieut. P. Maughan, in the Investigator, passed within a ½ mile of some PATCHES OF CORAL, having he supposed, about 6 or 8 fathoms water over them; but no soundings could be got with 110 fathoms line at that distance, and a boat could not be hoisted out to examine them, on account of the high sea and blowing weather. These patches were seen at 2 P. M. which are situated in lat. 14° 12′ N. by noon observation, and in lon. 112° 52′ E. It seems therefore, probable, that some banks, or even dangers may exist, to the South or S. Eastward of the Triton's Bank.

Tides and currents.

At the Crescent Chain, and at some other of the Paracel Reefs, there are regular tides during the springs; the currents run generally strong before the wind in both monsoons, but in light winds between the monsoons, they are continually changing their direction amongst the shoals; ships ought, therefore, never to come within the limits of these dangers, if it can possibly be prevented, for they may be drifted upon some of the reefs during calms, close to which there is no anchorage. There are several channels betwixt the different reefs or shoals, from 4 or 5, to 10 and 12 leagues wide.

Macclesfield Bank.

MACCLESFIELD BANK, discovered by the English ship of this name in 1701, is of greater extent than generally supposed, for the Fort St. David country ship, is said to have obtained soundings in lat. 15° 17′ N. on its southern part; and in lat. 16° 19′ N. by noon observation, the Stormont had 41 fathoms on its northern part, and about 1 mile farther to

Geo. site.

the southward she had 14 fathoms water. The Cirencester had soundings in lat. 16° 21′ N. on its North end; the bank, therefore, appears to extend from lat. 15° 17′ to 16° 21′ N.: its extent East and West, is about 70 miles, the western edge being nearly on the meridian of the Grand Ladrone, and its eastern edge about 1° 10′ E. of that meridian, by chronometers. The depths on this bank are generally very irregular, from 25 or 30, to 45 or 50 fathoms coral rock; and in some places, where the soundings are a little regular, the bottom is coarse, or fine sand. There appear to be gaps in some parts of the bank, where no ground is obtained with 80 or 100 fathoms line; for several ships in steering directly over it, after getting ground, have lost soundings for a considerable time, and obtained them again. The Carron, in lat. 15° 27′ N. and 30 miles East of Grand Ladrone, by chronometers, had 13 fathoms coral rock, and in 10 minutes no ground with 60 fathoms of line steering N. N. E. and North; after running 10 miles, she got ground 14 and 16 fathoms, and carried soundings of 35 to 44 fathoms, steering North 8 miles, and again lost ground; continued steering a North course 14 miles, and had no ground with 45 fathoms of line, until in lat. 16° 0′ N., she then carried soundings of 38 and 44 fathoms, steering 4 miles on the same course.

On the northern and eastern parts of the bank, there are level patches of considerable dimensions, with regular soundings from 9 to 15 fathoms, sandy bottom; there are also some patches on the southern and western parts, with 14 to 17 fathoms upon them. In lat. 15° 40′ N. on the meridian of Grand Ladrone by chronometers, the Gunjavar had 13 and 14 fathoms water; in lat. 16° 10′ N., and 32 miles East of Grand Ladrone by chronometers,

she had 10 fathoms coral: in lat. 15° 30′ N., and 26 miles East of Grand Ladrone by chronometers, she had 12½ fathoms; and in lat. 16° 5′ N., and 28 miles East of Grand Ladrone by chronometers, she had 10 fathoms coral rock. The Castlereagh, in lat. 15° 58′ N., and 7 miles East of Grand Ladrone by chronometers, had 14 fathoms, and in lat. 15° 43′ N., and 3 miles East of Grand Ladrone, she had 40 and 43 fathoms, all coral rock.

The greatest extent of the bank, East and West, appears to be near its northern extremity, for Captain Fraser had soundings 1° 8′ E. of Grand Ladrone by chronometer. In lat. 15° 56′ N. and 1° 8′ E. of Grand Ladrone, by chronometer, the Thetis had 11½ fathoms, and carried soundings 3 or 4 miles farther to the eastward, deepening to 20, 40, 60, and 75; then 80 fathoms no ground when 1° 12′ E. of Grand Ladrone.

The shoalest water seems to be on the northern extremity of the bank; for in lat. 16° 19′ N. and 50 miles East from Grand Ladrone, by chronometers, corresponding with lunar observations, the Cirencester had ¼ less 10 fathoms, deepening gradually until in lat. 16° 21½′ N. then 55 fathoms no ground.

The American ship Devotion, had 8¼ fathoms in lat. 16° 9′ N.; and the Milford had regular soundings of 8½ to 9 fathoms near an hour, steering to the N. Westward over the N. E. part of the bank.

It has been said, that there is 5 or 6 fathoms water on some parts of the Macclesfield Bank; but the least water found on it, by *indisputable* information, appears to be 8 fathoms; and there probably may be rather less, on some small patches of the coral ridges. Although this bank seems free from danger *at present*; yet, by the progressive vegetation, and consolidation of the coral into rock, the shoalest patches may *in time* become so much elevated, as to render them dangerous for large ships to pass over, when the sea runs high.

Between the Macclesfield Bank, and the eastern limit of the Paracels, it has been said, there are other coral banks with soundings of various depths upon them; yet, in the space of about 16 leagues, comprehended between the western edge of the Macclefield Bank and the Bombay's Shoal, or N. Eastern limit of the Paracels, probably no soundings are to be obtained.

SCARBOROUGH SHOAL, or MAROONA, on which the Scarborough struck in the the night, on the 12th of September, 1748, is a dangerous reef of rocks, a little more than midway from the Macclesfield Bank, toward the coast of Luconia. From the North end to the middle of the shoal, it is about 9½ miles in extent East and West, decreasing to a point at the South end, steep to, on all sides, having no soundings close to the rocks, of which only a few are seen above water, interspersed over different parts of the shoal. A frigate, sent by the Spanish Admiral from Manilla, surveyed it in April, 1800, and found it extend 8¾ miles North and South, or from lat. 15° 4′ to 15° 12¾′ N.; the East part 3° 6¾′ West, and the Western part 3° 16¼′ West from Manilla, by chronometers; and the nearest part, distant 131 nautic miles from Point Capones. This makes the centre of the shoal in lon. 117° 48½′ E., Point Capones being in lon. 120° 3′ E. Captain T. Robertson, in the Cirencester, passed close to this shoal on the 20th of October, in the same year, and made it 8° 47′ E. of Pulo Sapata, by chronometers, or in lon. 117° 49½′ East. Scarborough Shoal. Geo. site.

ST. ESPRIT SHOAL, is very imperfectly known, both in respect to its situation and extent: and whether it is really dangerous, has not yet been ascertained *beyond doubt*. M. D. Apres, places the centre of it in lat. 19° 33′ N. and 55 miles West from Grand Ladrone *by account*; being 6 leagues in diameter, with 9 to 15 fathoms on its southern part, and on the northern part, rocks even with the water's edge. Mr. Dalrymple has placed its centre in lat. 19° 6′ N. and 39 miles West of Grand Ladrone, from the Asseveido's account, which vessel discovered it on her passage from Macao to Manilla, on the 17th of May, 1755. The Grosvenor sailed 2 miles on it, in 1765; she got upon its eastern part, had 6¾ fathoms, and St. Esprit Shoal.

saw several spots, with *apparently* less water; this ship's position of the shoal, and that assigned to it by the Asseviedo, agree with each other. A French ship had 8 fathoms on it in 1763; she agrees with the ships mentioned, in respect to its latitude, but states the bank to be small. The Milford, in 1789, got upon its eastern part; perceiving the rocks along side, sounded, had several casts of 8 fathoms, and suddenly got out of soundings, by hauling to the eastward: she steered N. by E., and made the Grand Ladrone bearing about N. E. by N.

Lieutenant Ross, in the Discovery, on the 24th of June, 1813, steering eastward, got from 25 fathoms no ground, into 15 fathoms coral, and having ran about a mile, lost soundings. Steered back to the westward, and at 11 hours 55 minutes A. M. again got on the bank, and ran 3 miles across it, least water found was 10 fathoms. At noon, when in this depth, by good observation the lat. was 19° 30′ 10″ N. lon. 113° 6′ E. or 38 miles West from Grand Ladrone by chronometers, in a run of 48 hours to that island.

Geo. site by Lieut. Ross.

Lieutenant Ross is of opinion, that this bank is of small extent, that the report of dry rocks on it is without foundation, as the swell at this time was high, and would have produced breakers on any very shoal parts; whereas, no discoloured water was visible till in 10 fathoms, although the day was very clear. But strong ripplings broke on board the ship when in the vicinity of the bank, which might be mistaken for breakers by persons unacquainted.

The true situation of the St. Esprit Bank, here given by Lieutenant Ross, agrees nearly in latitude with De Apres' account, but differs 24 miles from that of the Asseviedo and Grosvenor, which leaves room to apprehend, that 2 banks detached from each other, *may possibly* exist hereabout. The Althea in 1806, passed close to discoloured water, in lat. 19° 36′ N. lon. 112° 17′ E., or 1° 48′ East of Tinhosa; she hauled off from it, but got no soundings in passing.

Pratas Shoal.

PRATAS, or PRATERS SHOAL, is of circular form, flattened on each side, with 4 obtuse points: it is composed of coral rock, level with the water's edge in many places; in other parts, there are from 2 to 8 feet water over the rocks. On the N. W. part, about 2 or 3 miles inside of the edge of the reef, lies a low island formed of white coral, and of considerable size, covered with coarse grass and shrubs, which may be seen 3½ leagues from a large ship's deck; it is visible, when near the southern extremity of the shoal, but more conspicuous in approaching it from the West or Northward.

The South part of the shoal, is a continued range of breakers steep to, extending W. N. W. and E. S. E.; the western side, stretches N. N. W. and S. S. E. and although the water appears very shoal on this part, the sea does not always break; the eastern side does not break when the sea is smooth, for the Eugenia, on the 22d of October, 1805, was within 3 or 4 miles of this side at noon, before the shoal was discerned* When the sea runs high, it appears, that breakers are seen mostly all round the exterior parts of the shoal: but inside, the water is smooth, of a green colour, and seems pretty deep in some places. Although it is steep to, in most parts, there appear to be several spots where a ship might find anchorage outside of the breakers, in a case of necessity, particularly on the West side; but the best anchorage is to the N. Westward of the island, where soundings project 2 or 3 miles from the edge of the shoal.

Several navigators by good chronometers, agree nearly, in making the South end of the shoal in lat. 20° 36½′ N.; North end in lat. 20° 52′ N.; East side in lon. 116° 52′ E.; West side in lon. 116° 41′ E.; and the body of the island in lat. 20° 44′ N. lon. 116° 42′ E.

Geo. site.

By good chronometers, Captain Mackintosh, made Pratas Island 1° 40½′ East of Pedro Branco, 2° 26½′ East of the East end of Great Lema, and 2° 54′ East of Grand Ladrone.

* The Frederic Adolphus Swedish ship, was lost on the East side, on the 4th of September, 1761, with the island bearing W. N. W., and several other ships have been wrecked on this dangerous shoal.

Lieutenant Ross, in the Discovery, with the Investigator in company, visited this shoal on the 28th of August, 1813; the first soundings got were 74 fathoms fine coral, about 1½ or 2 miles off the N. E. point, and a little beyond that distance no ground. From hence, steered along the North side, about ¾ of a mile off the breakers, in soundings from 31 to 38 fathoms; the Investigator keeping about ¼ mile off, had great overfalls from 10 to 24 fathoms. After rounding the N. W. point about 1 mile off, in 35 fathoms rocky bottom, they anchored on the West side in 24 fathoms, with the island bearing from S. 39½° E. to S. 65½° E. off its West end about 1½ mile, N. W. point of the shoal N. N. E. distant 2 miles; and about half way between the ship and the shore, had 4 and 5 fathoms, then very shoal water.

On landing, there was found to be a deep inlet or harbour for boats on the West side of the island, which must afford shelter to the Chinese fishermen, who come here to fish in the early part of the year; and upon the island was erected a Chinese Temple by pieces of wreck, apparently that of a junk.

By observations taken on the island, Lieutenant Ross made it in lat. 20° 42′ 55″ N. lon. 116° 44¾′ E. North-east point of the shoal in lat. 20° 47′ N. lon. 116° 53¾′ E. North-west point in lat. 20° 45′ N. lon. 116° 42¼′ E., and the ships anchorage on the western extreme in lat. 20° 43′ N. lon. 116° 41¾′ E., which situations were fixed by 3 very good chronometers. Geo. site by Lieut. Ross.

Pratas Island was found to bear from Pedro Branco S. 42¾° E. distant 130½ miles, and from the North end of the Great Lema S. 59° E. distant 157 miles.

The shoals which have been described in this section, are the only dangers situated in the *northern* part of the China sea, at a considerable distance from land.

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## *ISLANDS and HARBOURS on the SOUTH COAST of CHINA,* WESTWARD of CANTON RIVER, with SAILING DIRECTIONS.*

NOW-CHOW, in lat. 20° 58′ N., lon. 110° 26′ E., bearing W. S. W. ½ S., about 17 leagues from Tien-pak, and situated at the N. E. part of the peninsula of Lui-chew-fu, is a small port, dangerous to enter; but when in it, there is good shelter. This place was a rendezvous of the Ladrones, whose vessels anchored in great numbers, along side of the forts and town, their crews being part of the inhabitants. The Maria, a Portuguese ship, went into this place for water, and was captured by the Ladrones; ships ought not to go into the harbour, if not well armed. Geo. site of Now-chow.

OU-CHEUN, situated near a remarkable high bluff rocky mountain projecting from the main, considerably to the westward of Tien-pak, is a town with a channel leading to it; where is said to be a harbour, with water on the bar sufficient for a small ship. Ou-cheun.

The high bluff mountain bears from Sey-ho Point S. 84° W., and the coast to the westward of this mountain is low and sandy, scarcely visible from the mast-head in 10 fathoms water.

TIEN-PAK, or TIEN-PE-HIEN, is the principal place on the South coast of China where salt is made, and several hundred Junks are employed transporting it to Canton. Tien-pak, and the adjacent coast and islands.

* Chiefly from the survey of that coast, by Lieutenants Ross and Maughan.

The high land on the N. E. side of the road, called Lintoa, has the appearance of a high round mountain, in coming from the eastward; it is separated from the other high land to the eastward, by an isthmus of white sand, and its southern extreme is called Sey-ho Point. From this point E. 12° S. 1¾ mile, and 1 mile distant from the high-land, lies a reef of rocks on which the sea often breaks, having 11 fathoms close to, on the South side, with 7 fathoms regular soundings between it and the shore. From Sey-ho Point, S. 41° W., about ½ a mile, Pauk-pyah, a large rock of white aspect is situated, having between it and the point, 6 and 7 fathoms water. Foong-ky-chy, a small island, lies about 1¾ mile to the westward of Pauk-pyah. Ty-foong-kyoh, about 2¼ miles to the S. Westward of the latter, is of considerable height, being the outermost island of the road, situated in lat. 12° 22½′ N., lon. 111° 13′ E. or 2° 31′ West from Grand Ladrone by chronometer.

Geo. site.

Directions for sailing into the road.

A small ship in want of shelter from a N. E. or East gale, may keep near the reef of rocks to the eastward of Sye-ho Point, then between the point and Pauk-pyah, and anchor in 4 fathoms sand and mud, about ¾ of a mile to the westward of the point, with Pauk-pyah, bearing S. 3° E., and a pagoda on the high land near Sye-ho Point N. 63° E. She must not go farther to the northward, for the bay is very shoal in that direction, with a rock in it above water.

Large ships ought to pass about 1 mile to the southward of Pauk-pyah and Foong ky-chy, in 7 or 8 fathoms water, and anchor in 6 fathoms between the latter and Ty-foong-kyoh, or rather a little inside of this island, which will shelter them from S. W. winds; and Foong-ky-chy, and Sye-ho Point, will break the force of the N. E. and E. winds. From the N. W. side of Ty-foong-kyoh, there projects a shoal bank with only 2¼ fathoms; but directly inside of its North point, there is 6 and 6½ fathoms soft bottom.

Tien-pak Harbour, being very small, and the bar situated about 1 mile to the N. N. E. of Foong-ky-chy, having only 3½ fathoms on it at high water, ships ought not to go into it, unless they are in want of immediate repairs. When at anchor in the road, the coast from Sye-ho Point to the remarkable bluff distant hill to the westward, appears as 1 deep bay with a sandy beach, having high back land, and the entrance of the harbour is not easily discerned.

If a ship intend to go in, she should anchor in 4½ fathoms mud, between the North side of Foong-ky-chy and the bar, to be ready to cross over at high water. To approach this anchorage, coming from Sye-ho Point or from Pauk-pyah, *two sunken rocks* must be avoided, which lie between the latter and Foong-ky-chy, with 5 fathoms water close to them: they bear from Pauk-pyah N. 79° W., and from Sye-ho Point S. 77° W.; it is, therefore, advisable, to keep the highest part of this point bearing East, in passing to the anchorage at the bar.

On the N. W. end of Foong-ky-chy, there is a small sharp hummock, which having brought to bear S. S. W., a vessel may steer on the opposite point toward the bar, and will shoal gradually. The best guide, after getting over it a little way, is, for a person at the mast-head to direct the course up channel between the 2 dry sands; or if covered, to keep a boat on each side. The channel is not more than ½ a mile wide, and in it the depth increases from the bar, to 7 fathoms mud close to a low point of sand that forms the S. E. side of the harbour; and here, a vessel is sheltered from all winds: this point is distant 2 miles from the bar, and bears from the small brow of Foong-ky-chy N. 28° E.

The channel decreases in depth to 2½ fathoms, where the salt Junks lie close to the salt pans, about 2½ miles to the northward of the low sandy point, the site of a village, protected by small forts on each side of the harbour.

To the N. Westward of the bar about 1¾ mile, lies Marble Rock, and near 4 miles more to the westward, there is a reef of black rocks; neither of these can be approached, the water being very shoal on that side of the bar. The tide rises 8½ feet on the bar at full and change of the moon; high water at 12 hours. After the 1st of September, there is almost a con-

stant westerly current along this coast, running from ½ a mile to 1½ mile per hour. TIEN-PAK CITY, is walled round, and of considerable extent; it lies at the bottom of the shoal bay on the N. E. side of the harbour, and can only be approached in boats at high water, through creeks that intersect the extensive flat situated between it and the anchorage. A ship touching here in distress, may procure temporary masts, and get iron work done in the city; refreshments of all kinds may be got from the villages contiguous to the harbour. Some water may be obtained on the Island Ty-foong-kyoh, at a small spring near the shore; but the Chinese boats will bring it from the city, at a very moderate rate. It is prudent to send an officer to wait on the chief Mandarin, stating the supplies wanted, and a small present to him may be useful. The Warley anchored off this place on the 27th of September, 1803, after being disabled in a Ty-foong, and got from the Mandarin, a pilot and 30 Chinese, to assist in working the ship to Macao; she worked close along the coast, and was from the 5th of October to the 4th of November, getting from Tien-pak to Macao. Tien-pak City.

TY-CHOOK-CHOW, in lat. 21° 26′ N., about E. by N. from Sye-ho Point, and 1 league distant from the coast, has rocks on the North side, stretching to the N. W., and toward the coast; but there is anchorage on the west side of this island in 6 fathoms fine sand, about ¾ mile off shore, where a ship will be sheltered from easterly winds: the soundings are 7 and 8 fathoms, betwixt it and the reef to the eastward of Sye-ho Point. Ty-chook-chow.

CHIN-CHOW, bearing N. 63° E. from Ty-chook-chow, distant 5½ miles, is high, and covered with grass; it should not be approached on the South side nearer than 1½ or 2 miles, in 10 or 11 fathoms, for a reef of rocks projects S. ¼ E. from it about ¾ of a mile, on which the sea generally breaks: close to the island on the East side, there is 8 fathoms foul ground; to the westward, between it and Ty-chook-chow, there are 7 and 8 fathoms gravelly bottom. The coast between these islands, forms a deep bay with shoal water, having on the East side a fort, and an inlet for boats, called Yue-tong, (or Fish Pass.) Chin-chow.

SONG-YUE POINT, in lat. 21° 31′ N., lon. 111° 40½′ E., bearing from Chin-chow E. 13° N. about 10 miles, is the S. Western extremity of the great bay, at the N. E. part of which Hai-ling Harbour is situated, and close to it there is 9 or 10 fathoms water. Approaching it from the eastward, 3 little hummocks appear near the point, with a long sandy beach between them and the high land: the bay on the West side is shoal, and Song-yue Town stands at its N. Eastern angle. The Brothers, distant 3 miles N. N. E. from Song-yue Point, are 2 islets near the high land, having rocks projecting about ½ a mile; but about 1 mile to the eastward of them, there is 8 fathoms water. Geo. site of Song-yue.

HAI-LING-SHAN,* (called Huiling-san by Lieutenant Ross) extends E. N. E. and W. S. W. about 4 leagues, and is a high island, separated by a narrow passage from the coast on the North side, having an extensive shoal bay to the N. Eastward, and the harbour is on the West side. Two small islands, by some persons called TWINS, by the Chinese, MAMEE-CHOW,† bear from Song-yue Point E. 17° N. distant 10 miles; and are situated in lat. 21° 34′ N., lon. 111° 50′ E. close to the S. W. point of Hai-ling-shan, being united to it by a reef and sand bank. They form the outer point of Hai-ling Harbour, and in coming from the eastward, being on with each other, appear as a single island. Geo. site of Hai-ling-shan, with directions for sailing into the harbour.

To sail into the harbour, if coming from the eastward, pass about ¼ mile on the South side of Mamee-chow, in 8 fathoms water, and round them about the distance of a cable's length in 7 fathoms. On the brow of the western 1, there is a remarkable stone, and N. 7° W.

* Hai, is literally sea; and Shan, a high island or mountain, in the Chinese language.

† This signifies Breasts or Paps, as Chow does an islet or small isle.

from this distant 1200 yards, lies a sand bank, having only $2\frac{1}{4}$ fathoms on it at low water spring tides. From the same stone, Deep-water Point bears N. 26° E. distant 1400 yards, and the space between it and Mamee-chow, is dry at low water. Having rounded the western Mamee-Chow, steer direct for Deep-water Point, which pass at rather less distance than a cable's length, for the edge of the $2\frac{1}{4}$ fathoms bank is within $2\frac{1}{2}$ cables' lengths of it.

From Mamee-chow, the depths are 7 and 8 fathoms, until they increase suddenly to 9 and 10 fathoms near Deep-water Point. From this point N. 32° E. distant 2170 yards, there is a small hill covered with trees, and a fort on its summit, not easily discerned: steer from Deep-water Point direct for the fort, until abreast of Teep-chow, a small island about mid way between them. After passing the point, the depth will suddenly decrease to 6, then to 5 fathoms near Teep-chow, to the westward of which, about $\frac{1}{4}$ mile distant, large ships should anchor with the fort bearing N. E. by N. The anchorage is confined for more than 2 large ships; and although this harbour is safe, it should only be resorted to by ships of large size, in a case of necessity.

The bay between Teep-chow and Deep-water Point, has only $2\frac{1}{2}$ fathoms water in it; here, adjacent to a small joss house in ruins, fresh water may be procured.

The harbour for small vessels, is in the bay formed between Teep-chow and the fort, where the depths are 8 and 9 feet; the village Chino is situated in this bay, where water and refreshments are obtained; carpenters, and caulkers, may be got to work on board, and smith's work can be executed at the village.

About $\frac{1}{2}$ a mile westward from Teep-chow, the water is shoal, over a sandy bottom; and deepens again in a narrow gap, to the westward of which there are breakers, about $1\frac{1}{4}$ mile distant from the fort. There is a small peaked islet about 2 miles N. $13\frac{1}{2}$° E. from the fort, and between them some rocks, dry at low water; a ship should not pass the fort, the water to the northward being shoal.

The $2\frac{1}{4}$ fathoms bank is small, and steep to the East side; it bears from the fort S. $44\frac{1}{2}$° W., and from Deep-water Point W. 8° S. On the N. W. extreme of Hai-ling-shan, there is a small peaked hill, bearing from Deep-water Point N. $21\frac{1}{2}$° E., distant about 4 miles; when this peaked hill and peaked islet are in 1 bearing N. $28\frac{1}{4}$° E., the $2\frac{1}{4}$ fathoms bank is on the same line of bearing. A small ship may pass to the westward of the bank, in 4 fathoms sandy bottom, but it is not an advisable channel for a large one.

The tides are sufficiently strong to admit a ship to *back* and *fill*, from Mamee-chow to the anchorage, as the channel is too narrow for working. It is high water about $8\frac{1}{2}$ hours on full and change of the moon, at the anchorage, and the tide rises from 7 to 8 feet. The harbour may be considered safe for ships of any size, being sheltered by Mamee-chow Point, and Mount-Look-Out (740 feet high) from southerly winds; by the other high land of the island from easterly and N. E. winds; and by the high land of Koan on the opposite coast, from westerly winds. The West side of the bay, between Mamee-chow and the Brothers, should not be approached under 5 fathoms, the bottom being sandy, with shoal water under that depth.

Bluff Point, and the South side of the island.

BLUFF POINT, bearing E. 9° N., 3 miles from Mamee-chow, is high, and has 9 and 10 fathoms water close to it; between them, the land is cultivated, and forms a bay. To the eastward of Bluff Point, the land forms a small concavity fronted by a large sandy beach; and 4 miles E. $23\frac{1}{2}$° N. from that point, there are 2 rocky islets close together, appearing as 3 small hummocks, which may be passed at the distance of a mile in 7 or 8 fathoms. A little inland from these, stands Sugar-loaf Hill, which does not shew its peak when seen to the eastward of Bluff Point.

Close to the East point of Hai-ling-shan, and bearing E. $17\frac{1}{2}$° N. distant $5\frac{1}{2}$ miles from the 2 rocky islets, there is a small island, having 7 fathoms close to it, and to the East end of Hai-ling-shan; but S. W. by S. $1\frac{1}{4}$ mile from the small island, there is a reef of rocks

nearly covered at high water, which has 6 fathoms close to, and may be passed about a mile off, in 7 or 8 fathoms. On the East part of Hai ling-shan, and contiguous to the sea, there is a remarkable patch of red sand, discernible when off the Mandarin's Cap.

TY-OA POINT and BAY, about 5½ leagues to the E. N. Eastward of the East end of Hai-ling-shan, and bearing from the Mandarin's Cap N. 24½° W., distant 16½ miles, is in lat. 21° 43′ N., lon. 112° 15′ E. The depths decrease regularly coming from the Mandarin's Cap, to 4¼ fathoms at low water, close to Ty-oa Point; inside of the point, and in the extensive bay to the N. W., the water is shoal. Ty-oa Village, is round within the point, and the residence of a Mandarin; here, a large ship might procure water, or get a letter forwarded to Canton, but the water is too shoal to anchor under shelter of the point, except for small vessels. There is a white building amongst some trees, on an elevated point a little inside of Ty-oa Point, by which the approach from the southward to this place may be known. A small vessel may anchor within ½ a mile of the point in 3 or 3¼ fathoms at low water, and be sheltered from easterly winds; but she must not go near the island that lies a little inside, as some rocks covered at high water, with 4 fathoms close to them, project to the southward of it, and bear from Ty-oa Point W. 8½° N. distant 1¼ mile. Close to the town there is 2½ fathoms water, where the Salt Junks take shelter when chased by the Ladrones, and are protected by 2 old batteries. Ty-oa Point and Bay.

The following islands and rocks, are interspersed over the space of sea comprehended between Hai-ling-shan and Haw-cheun.

MANDARIN'S CAP, called FAN-SHEE-AK* by the Chinese, in lat. 21° 28′ N., lon. 112° 22½′ E., is a barren rock of white appearance, about 200 feet high, converging gradually to the summit, and terminating in a sharp peak: near it, to the northward, lie 2 other rocks, 1 of which is very small. From the Mandarin's Cap, Nam-oa Harbour bears N. E. by E. distant 13 miles, and the South end of St. John's E. 14½° N. near 8 leagues. On the South and West sides, there is 15 and 16 fathoms mud bottom within a cable's length of the rock, and 13 fathoms a little to the northward. Off these rocks in August and September, when easterly winds frequently prevail, the current sometimes sets to the westward 3 miles per hour; abating only to 1½ mile per hour, when the tide should be setting to the eastward. The westerly current prevails constantly along this coast during the easterly monsoon, and frequently in the S. W. monsoon; particularly, if the wind veer to the eastward. Geo. site of Mandarin's Cap. Currents.

NAM-PANG, bearing N. 63° W., distant 10½ miles from the Mandarin's Cap, being the next island to it, is high at the West end, and about 1½ mile in length; on the North side, a small bay nearly separates the island into 2 parts. It is safe to approach, having 9 and 10 fathoms near the shore all round, but it is destitute of fresh water. Nam-Pang.

ROUND ISLAND, bearing West 3½ miles from Nam-pang, is small, and named from its appearance: to the S. S. Westward of it about 2 miles, there are 2 rocks above water, with 10 fathoms water betwixt them and the island, and no hidden danger. Round Island.

QUOIN, is an islet resembling a gunners quoin, situated close to the East side of Nee-wok, and 2¾ miles to the N. N. W. of Nam-pang; the passage between it and the latter, has 8 and 9 fathoms water in it, clear of danger. Quoin.

NEE-WOK, is an island of moderate height, about a mile in length, bearing from Nam-pang N. 34° W. about 3½ miles; there is a small rock above water, betwixt it and the Quoin, but no other danger; the depths being 8 and 9 fathoms close to it all round. Nee-wok.

* i. e. White Rock.

Ty-wok. TY-WOK, in lat. 21° 39′ N., about 1½ mile N. N. W. from Nee-wok, and the N. Westernmost of these islands, is high, appearing like a saddle when viewed from S. Westward. There is a little bay on its North side, where fresh water can be procured, to the westward of a small temple near the beach. There is 8 fathoms soft bottom, in the passage between this island and Nee-wok; and S. W. by S. 1 mile from Ty-wok, and N. 49° W. from the summit of Nam-pang, there is a rock nearly level with the surface of the water, with 7 fathoms all round. It is generally visible 3 or 4 feet above water, and the sea always breaking upon it, renders it conspicuous in passing. The depths between Ty-wok and the East end of Hai-ling-shan, from which it is distant 7 miles, are 7 and 8 fathoms; and to the N. Eastward, betwixt it and Ty-oa Point, they are 5 and 6 fathoms.

Geo. site of Mong chow; MONG-CHOW, in lat. 21° 39′ N., lon. 112° 29′ E., situated at a short distance westward from Haw-cheun, and bearing N. N. E. from the Mandarin's Cap 11¼ miles, is a high island about 2¼ miles in length, covered with verdure: there is a town near its summit, which is only discernible from the S. Eastward; and at a short distance from the South side of the island, lies a high rock with 4 fathoms close to; there is also some rocks off the N. E. point.

Small vessels may anchor in 3 fathoms at low water, on the West side of this island, during easterly winds; and fresh water may be procured at a small beach on that side, near the South point. Between the North end of the island and the coast, the water is very shoal, and there is only 2 fathoms at low water, in the channel betwixt it and Haw-cheun; but the bottom is all soft, with a very regular decrease in depth, from the Mandarin's Cap to these islands.

Geo. site of Haw-cheun; HAW-CHEUN, or FALSE ST. JOHN'S, is a high island extending N. E. and S. W. about 11 miles. The S. W. end, in lat. 21° 35′ N., lon. 112° 31½′ E. is a bluff point, having 7 and 8 fathoms water close to, and bears W. 5° N. from the South end of St. John's, distant about 14 miles. Close round this point on the West side, there are 2 small bays with sandy beaches, having 3½ fathoms water, where small vessels may take shelter. A large ship is well sheltered from easterly winds, by anchoring in 5 or 6 fathoms soft mud, about a mile off; in the Gunjavar, in 1787, we anchored here in 6½ fathoms, about 1½ mile off shore, with the South point of Haw-cheun bearing S. E. by S., the village Ty-han E. N. E. ½ N., and the observed lat. 21° 36′ N. At this village, a few bullocks and other refreshments may be procured, and fresh water in the southernmost small bay. This anchorage is generally called Haw-cheun Road, or Bay.

Nam-oa Harbour. HAW-CHEUN, or NAM-OA HARBOUR, named from the village Nam-oa, situated therein; is formed between the S. W. end of Haw-cheun, and Nam-oa Island a little to the eastward, which fronts the South end of Haw-cheun. Although rather small, this harbour is safe and convenient for refitting a ship, after being disabled by a Ty-foong, or otherwise requiring shelter. The South or large entrance, betwixt Nam-oa Island and the high bluff S. W. point of Haw-cheun, is ¾ of a mile wide; having an islet on the East side called

Geo. site of Passage Island. Passage Island, joined to the West point of Nam-oa Island by a few rocks. Passage Island is in the same latitude as the S. W. point of Haw-cheun, 21° 35′ N., and in lon. 112° 34½′ E. by chronometers from Macao. This South entrance, is about 1½ mile eastward of the high bluff S. W. point of Haw-cheun, and is preferable to the eastern entrance for ships drawing above 16 feet water; having 6 fathoms in it, gradually decreasing to the sandy beach at the village fronting it, and no danger whatever. With an easterly wind, the best anchorage for a large ship, is about half way between Passage Island and Green Point on Nam-oa Island, which has a round mount on it covered with grass, and forms the N. W. point of the island; here, she will have 4½ or 5 fathoms soft mud at low water, according as her birth is

near to, or farther from Nam-oa Island. She will be sheltered by this island (548 feet high) to the eastward, and by the high land of Haw-cheun to the northward, round to the S. W.; from whence, if it blow strong, a long ground swell rolls in, rendering it necessary to move farther in, to the western part of the harbour, where is from 4½ to 4 fathoms mud, at low water.

The eastern entrance, formed betwixt Nam-oa Island and the S. E. part of Haw-cheun, has 4½ fathoms, gradually decreasing inside to 3½ fathoms at low water spring tides; and although it is the most contracted of the 2, will be found very convenient for small ships. The best birth here for a small ship, is abreast of the sandy beach on Nam-oa Island, which forms Green Point; not so far in as to open the South entrance, but to see it over the narrow neck of that point. In this birth, she will have 3 fathoms at low water spring tides, be in a good situation to protect her boats when watering; and although exposed to the wind between E. N. E. and E. by S., no swell of consequence can roll in, being prevented by the islands that lie contiguous to the entrance.

To sail to the harbour by the eastern entrance.

TO ENTER the harbour by this channel, coming from the eastward; after rounding the South end of St. John's pretty close, steer about W. by N., or more northerly if the ebb is running, which course will bring a vessel near the small rock, that bears from St. John's W. 9½° N., distant 7 miles: it has 7 fathoms close to, is about the size of a small boat, never entirely covered, and the sea generally breaks on it. To the northward of this rock about ¾ of a mile, lies Round Island, being the southernmost of a chain of rocky islets, that fronts the East side of Haw-cheun. Having passed to the southward of the Boat Rock at a small distance, steer from it about W. N. W. for the entrance of the harbour, distant 3 miles. From the S. E. part of Nam-oa Island, a few rocks project about ¼ mile, which have 7 fathoms close to them, and must be left to the southward, in entering the harbour.

Watering place.

There are several watering places about the harbour, the largest and most convenient of which, is in a sandy bay on Haw-cheun, bearing from Green Point N. N. E., where the water comes close to the beach.

Barren Island, about a mile to the northward of Green Point, has a white conical rock inside of it; they are connected with Haw-cheun at low water, and separate Watering Bay from Nam-oa Bay, where the village* of this name, consisting of about 100 brick houses, is situated at a small distance from the shore. Here, a few refreshments, and fish, may be procured; but the surf renders the landing difficult, when the wind blows strong from the southward; it is then proper, to land to the eastward of Barren Island. About 10 hours, it is high water at full and change of the moon, the rise of tide 7 to 8 feet; and then, a small drain of ebb sets out through each of the channels.

Five Islands on East side of Haw-cheun.

FIVE ISLANDS, fronting the East side of Haw-cheun, are mostly small, and bound the West side of the channel, formed between it and St. John's. Round Island, the southernmost of them, and the rock bearing S. by E. ½ E. nearly ¾ of a mile from it, have been mentioned above; there are also other rocks, high above water, near it on the South side. The next island to the northward of Round Island, is the largest, high at each end, and nearly separated in the middle, with some rocks close to it on the East side. The third island is high, and covered with grass. The fourth, called Pi-pa-chow, is of middling height, covered with grass, having some rocks above water projecting off its South end; there is 4½ fathoms close to these rocks, and between them and the other island to the southward; and

* Strangers landing here, or at similar places where there is no Fort nor Mandarin residing, ought to be on their guard, in case of meeting with any of the crews of the Ladrone boats; for they frequently land, and put the defenceless villages under contribution, and are liable to make prisoners of Europeans, when that can be done with safety, in hope of getting a large sum for their ransom. There are, however, at present, few pirates on the *South* coast of China.

the same depth, close to the East side of Pi-pa-chow. The fifth or northernmost of these islands, lies nearest the Haw-cheun shore, with 4 fathoms at low water betwixt it and that shore. There is no hidden danger near these islands, and a ship drawing not more than 15 feet water, may either pass, or anchor between them and Haw-cheun, rather nearest the islands: here, she will find good shelter, in 3 or $3\frac{1}{2}$ fathoms soft ground, at low water, and be supplied with refreshments from the town of Haw-cheun, situated in a small bay fronting the islands.

All the space between these islands and St. John's, is clear from hidden dangers, with depths of 5 and 6 fathoms soft ground. The tides here, are strong in the springs, the ebb setting out, and the flood to the northward through the channel, and rise and fall about 8 feet. During the neaps they are weak, and much influenced by the winds.

To the northward of the Five Islands, the depths decrease to $4\frac{1}{2}$ and 5 fathoms, in a direct line toward the West point of St. John's, and continue the same in passing about mid-channel between this point and the island that lies off the N. E. end of Haw-cheun. Here, the channel is about a mile wide, which is the narrowest part, and where ships may be well sheltered during bad weather. Water may be got on St. John's, almost in every small bay. The entrance of the channel generally called St. John's Road or Bay, between the South part of St. John's and the Five Islands, is more open to blowing weather, for some ships at anchor there, have been obliged to cut their cables and put to sea; the Bombay, after cutting away her main-mast in a Ty-foong, to prevent being driven on the rocks, was afterward obliged to cut from her anchors, and the pilot ran her on shore in the mud, upon the coast to the westward of Mong-chow; here, she remained one springs, and was obliged to take out part of her cargo before she floated.

Safe anchorage in North part of the channel, between St. John's and Haw-cheun.

ST. JOHN'S ISLAND, or CHANG-CHEUN-CHAM, in length about 5 leagues N. N. E. and S. S. W., has been generally considered as 2 islands; in coming from East or westward, the highland on each extremity appears separated by a large gap or vacant space, which on a near approach, is found to be a low narrow isthmus of sand, uniting the high land, and having a bay on each side.

St. John's Island, the bays and adjacent dangers.

On the East side of the island, the depths are 7 and 9 fathoms near it, and no hidden danger, excepting a small rock only visible at low water; it lies in 7 fathoms nearly a mile off shore, and about 2 miles to the southward of the N. E. point of the island, opposite to a bluff point, from whence the land stretches to the S. Westward. Distant from the N. E. point of the island about $\frac{3}{4}$ of a mile, there are some rocks always above water, with a passage of 8 and 9 fathoms between them and the point; and to the northward of them, there are 5 and 6 fathoms. The North side of the island extends about 11 miles N. E. by E. and S. W. by W., having 2 small bays separated by a narrow peninsula; the western 1 called Sam-chow-tong, or Three Island Bay, is largest, with several small islands in it, and only $2\frac{3}{4}$ fathoms water within the point; there is a village in this bay, where refreshments may be got. All this side of the island is free from danger, the depth generally between 4 and 5 fathoms near St. John's, decreasing gradually toward the land to the northward, which is distant 6 or 7 miles. The bottom is all very soft mud, and it seems probable, that the N. W. side of St. John's, is a safe place during a Ty-foong; should a ship drag her anchors and settle in the mud, the risk of sustaining damage cannot be great. Several ships drawing 19 or 20 feet water, are carried by the pilots betwixt Haw-cheun and St. John's, round the North end of the latter, and between the Great and Little Wizard Rocks. In April 1787, we went through this channel in the Gunjavar, drawing 20 feet.

The large bay on the West side of St. John's, opposite to the sandy low isthmus, extends into the island a great way; but a ship cannot enter it, the water being shoal. From the West point of St. John's, which forms the North side of this bay, SHITTOE POINT bears S. 18° E. distant $4\frac{3}{4}$ miles, and separates it from Shittoe, or Sat-tye Bay, situated on the

S. E. side of the latter point. This bay has 6 and 7 fathoms water at the entrance, and a small vessel may go farther in, and anchor in 4 or 3½ fathoms; but it is too narrow for a large ship, unless she were to warp in. There is a watering place at the South side of the entrance, and a village at the bottom of the bay; which with several others on the island, have suffered much from the depredations of the Ladrones, who often haul their vessels up here to clean their bottoms. Close to the islet, and detached rock off the N. W. point of the bay, there is 6 fathoms water.

Between Sat-tye Bay and the South point of St. John's, there is another small bay, having 6 fathoms in it, and 10 fathoms water close to some rocks which lie off its South point.

WY-CAUP, a small, high rocky island in lat. 21° 34′ N., lon. 112° 47½′ E., fronts the South end of St. John's, and lies on the East side of the point, being separated from it by a very narrow passage: there are 13 and 14 fathoms close round this island, on the outside. Geo. site of Wy-caup.

LIEU-CHEW, in lat. 21° 36′ N. of moderate height and barren aspect, (called also Ou-chow) is separated from Wy-caup and the S. E. part of St. John's, by a safe channel 2 or 3 miles wide, with 13 to 15 fathoms water; and there is deep water close to the island all round, 17 and 16 fathoms on the South side, 13 fathoms on the North side, decreasing gradually to 10 fathoms close to the outermost Wizard Rocks, from which it bears S. 39° W. distant 4 leagues. Lieu-chew.

WIZARD ROCKS, situated off the South end of Ty-kam, between St. John's and the island Cou-cock, are separated in 3 divisions; the outermost division, consists of a group of 5 or 6 rocks about 30 feet high, in lat. 21° 47′ N., lon. 113° 1½′ E., having 10 fathoms mud at the distance of a cable's length from them. The Great Wizard Rock bears from the outer group N. 17° W. distant 1¼ mile, and 2 miles northward from it lies a white conical rock, called the inner or small Wizard Rock; near the great rock, the depths are 6 and 7 fathoms; and near the small one, about 5 fathoms soft ground. Betwixt them, but nearest the Small Wizard, there is a rock, covered at high tide, making it necessary for a ship passing betwixt them to keep nearest to the Great Wizard. There is another rock, always above water, bearing from the Small Wizard W. by N., having 4 fathoms near it; and there is a passage with 4½ fathoms water betwixt the Small Wizard and the South point of Ty-kam. Geo. site of the Wizard Rocks.

TY-KAM ISLAND, in lat. 21° 52′ N., close to the northward of the Wizard Rocks, is of considerable height, of darker aspect than the other land, and in clear weather, appears with red streaks: on the South part, in a small bay fronting the Wizard Rocks, behind a mound of sand near the beach, there is a village, and fresh water may be got at the western side of the beach. Between this island and Toon-qua the next island to the westward, the water is shoal, and also in the large space to the westward of Toon-qua. Ty-kam.

COU-COCK, the next island to the eastward of Ty-kam, is high, and in extent about 3½ miles East and West: the S. W. point, in lat. 21° 50′ N., lon. 113° 7½′ E., has a remarkable rock close to it resembling a boat under sail. The West side of the island is formed by a steep hilly ridge stretching North and South, having good anchorage under it in 6 fathoms, where ships are sheltered from N. E. and East winds; and there are 6 and 7 fathoms close to the South side of the island. Geo. site of Cou-cock.

TY-MONG, is a considerable island to the northward of Cou-cock, having an islet called Sam-cock joined to its S. W. point by rocks visible at low water. Betwixt Ty-kam and Sam-cock, the depths are 5 and 4½ fathoms; and there is a channel about 1½ mile wide, betwixt the latter and the N. W. end of Cou-cock, having it in 3½ and 4 fathoms. A vessel proceed- Ty-mong.

ing through it, should keep close to Cou-cock, and will have 4 or 3½ fathoms water on the North side of this island, where fresh water may be got at the westernmost of 2 small bays, formed on the North side of the island.

Ty loo. TY-LOO, is a high island, with a large white patch on its eastern side, resembling a ship's mizen or mizen staysail, when viewed in some directions. This island is separated from Cou-cock by an opening about 2 miles wide, with 7 and 6 fathoms water in it, decreasing gradually toward Ty-mong, which fronts the opening to the N. Westward. By passing close round the East point of Cou-cock, it appears that ships at a moderate draught of water, might anchor to the northward of that point in 5 fathoms, well sheltered from most winds; and small ships may find good shelter from easterly winds, by anchoring close under the West part of Ty-loo, in 4 fathoms water. The South end of Ty-loo is in lat. 21° 52½′ N. dist nt 9½ leagues from the Grand Ladrone; and it is safe to approach, having 6 and 7 fathoms close to the South and S. E. sides.

Sam-chow. SAM-CHOW, is the next large island to the N. Eastward of Ty-loo; the space between them is shoal, with some islets and rocks adjoining the N. E. end of the latter. The depths decrease gradually off Sam-chow, but it is not so bold to approach as the islands to the westward, as shoal water, from 3 to 4 fathoms, extends out from it a considerable way: there is a conical islet and some rocks close to its East point, with 3 fathoms close to them.

Montanha. MONTANHA, is a large high island to the N. E. of Sam-chow, and close to it on the N. E. side, is the Island Ko-ho; these 2 islands bound the Typa on the South side, and the entrance or great channel leading to Canton River, is bounded by them on the West side, and by Potoe and the other islands on the East side.

Broadway. THE BROADWAY, is formed at the entrance by Montanha on the East, and Sam-chow on the West side, and has sufficient depth to admit a large ship a considerable way up. It may be found very useful to such as intend to make a long stay near Macao, or to those who have parted from their anchors, and draw too much water to attempt the Typa.

The Water Islands, bearing W. 23° N. from Potoe, distant 8 miles, are 2 small islands off the South end of Montanha; and 1 mile N. 36° W. from them, lies another small island, having a small bay betwixt it and the West point of Montanha, called Lark's Bay, with 2¼ fathoms in it at low water: these islands are on the East side of the Broadway Entrance, and the conical hill at the S. E. end of Sam-chow, bearing S. 56° W. distant 4 miles from the Water Islands, is on the western side.

Directions for sailing into it. The best time to enter the Broadway is with the first of the flood, and if a ship at anchor in Macao Road is obliged to run for it with a N. E. or Easterly wind, about ¾ ebb will be the best time to leave the road, that she may meet the first of the flood when she reaches the Broadway Entrance, where it flows sooner than in the road. Having rounded Ko-ho or Cow-ow Point in 5 or 4½ fathoms about 1½ mile distant, steer round the high S. E. extreme of Montanha at any convenient distance, which has 3 fathoms near it, deepening gradually to the eastward toward Potoe. When abreast of the point of Montanha, the Water Islands are perceived on with each other, near the western extreme of a bay with a sandy beach: as there is not more than 2¾ fathoms in this bay, it should be avoided, by steering a course to pass about ½ or ¾ of a mile to the southward of the Water Islands, in 4½ fathoms water, then haul round the western island, preserving the same depth and distance. Do not exceed the distance of 1 mile to the westward of this island, for beyond that, the water shoals fast to 3 fathoms, toward the Sam-chow Shore. From the Water Islands, steer N. N. W. or N. by W. ½ W. giving a ¼ mile birth to the other island situated to the northward of

them. This course will carry you to the West Point of Montanha, in 5 fathoms water, off which, you may anchor in 5 to 6 fathoms, and be well sheltered, if you intend waiting only the termination of a gale.

From Montanha West Point, the water shoals gradually toward Ma-cheung-cock, the island on the West side of the channel, adjoining to the N. E. end of Sam-chow; and there is generally a line of fishing stakes extending westward from the point, with passages through them for vessels. Mong-chow, or Ballast Island, in lat. 22° 8½′ N. bears from the West point N. 20° W. distant 2½ miles, and between them there are 2 openings to the eastward, 1 leading to the Typa, the other to Macao, both so shoal as only to afford a passage for boats. About 1¼ mile to the N. Westward of the West point of Montanha, and fronting the opening through the Typa, there is a rock about the size of a small boat, never entirely covered. The channel for ships, is directly from the West point to this rock, passing it on the West side about a cable's length; for W. ¼ S. from it about 1 mile distant, there is another rock, and shoal banks bound the channel on both sides. From West Point to Mong-chow, the water is shoal, the edge of the bank leaving only a narrow passage on the East side of the easternmost rock, with 3¼ fathoms in it at low water. Pak-ting, a small island with a sharp hummock on its N. E. end, is situated on the western bank, and distant 3 miles W. 6° N. from Mong-chow: the bank is composed of mud, having 1½ fathom water on it, the edge of which extends 1½ mile off Pak-ting toward Mong-chow, and commencing at the western rock, stretches to the N. N. W. the whole length of the channel, contracting it to about the breadth of 1¼ or 1 mile.

If you intend to proceed farther up the Broadway than the West Point of Montanha, steer from the Point N. N. W. through the fishing stakes near it, toward the easternmost rock that fronts the opening through the Typa; the soundings will be 5½ or 5 fathoms, and the rock may be passed within a cable's length on the West side, for at the distance of ½ a mile on either side of it, the water is shoal. From it steer N. N. W. ½ W. 1½ mile, and you will then be abreast of the ruined towers on Mong-chow, in 4½ or 5 fathoms water, and may perceive a church, with the Bar-Fort of Macao, through the gap between that island and the Green Hill, that is separated from its North part at high water. This is a safe and convenient anchorage, about 5½ miles to the westward of Macao, and the boats are kept in sight when passing to, or from that place. Fresh water may be got in a small bay to the northward, under the Table Mountain, having a remarkable stone on its summit, called Kehan shee-ak, which is 895 feet high. Here the tide rises 7 or 8 feet at full and change of the moon, high water at 10¼ hours: the neap tides are very irregular, there being then, only 1 flood and 1 ebb of any considerable strength during the 24 hours.

The channel for ships, between Mong-chow and the Bluff Point to the northward, becomes narrow; should it be required to proceed higher up than that island, the course is N. N. W. ½ W. which will carry you about a mile above Bluff Point, in 5 to 4½ fathoms, and this point ought to be passed within ½ a mile: if drawing more than 16 feet, wait here for the last of the flood, to carry you past the small island Tang-lung-chow, situated a little to the northward, off which there is only 4½ fathoms at high water. From Bluff Point, the course is N. N. W. ¾ W. to pass about ½ a mile to the westward of Tang-lung-chow; and you should not go much farther West, nor so near the island, as to shut in the North Hillock of Mong-chow with Bluff Point. When abreast of the island, steer N. W. ½ N. or directly for the entrance of the river, keeping about ½ a mile off Ama-cock Point, which forms the East side of the entrance, has a pagoda on it, and is well wooded with trees. Here, the depth begins to increase, and in steering to pass Motow Fort, about ¼ mile off it, there is 8 or 9 fathoms. About 4 or 5 miles above this fort, the Broadway River separates into 2 branches: the easternmost called Hong-shan River, communicates with Canton, by which the trade is mostly carried on between this city and Macao. The wide opening to the eastward of Ama-cock Point, called the Flats, leads to Macao; there is only a passage

for boats through it, and the Ladrones, when refractory, have generally a fleet stationed about this part of the Broadway, to intercept boats going to, or from Macao.

If the wind will not admit a ship to sail directly into the entrance of the Broadway, there is room for short tacks between the Water Islands and the rocky islets off Sam-chow, taking care of the latter shore, which is shoal. Farther in, the channel contracts a little, but the tides are of sufficient strength to *back* and *fill* past the rocks that lie opposite to the Typa, or where the channel may seem rather narrow for working.

The direction of the flood outside, is governed principally by the winds; with strong easterly winds, it comes from E. S. E.; and from South, when S. Westerly winds prevail. The ebb runs generally to the S. W. Inside, the tides take the direction of the channel.

Freshes and currents,

THE FRESHES, from Canton River, set *almost* constantly from the South end of Montanha, along the shores of the islands to the westward, at the rate of 1 to 2 miles an hour, particularly with strong easterly winds. When there seems at times, to be on the surface, a flood tide setting to the eastward, or into the entrance of the river, the freshes underneath continue to run outward, by which ships are rendered ungovernable, even in fresh breezes. Many ships from this cause, after getting near Montanha, or betwixt it and Potoe, have been drifted along the islands nearly to St. John's, whilst making every endeavour with moderate breezes, to keep their heads to the eastward. Ships, therefore, steering in for the channel betwixt Potoe and Montanha, should never borrow near Sam-chow, or the other islands to the westward, unless it is blowing a strong gale at S. W.; for if they get into shoal water near the islands, when the winds are light, they must expect to have the stream of the eddy current, and be drifted to the westward.

how to be avoided.

These freshes, or westerly currents, abate at times, and then weak tides set to the eastward; but as these are not strong, nor of long duration, ships should keep on the East side of the channel, in deep water toward the Ladrone and Potoe, and anchor instantly, if the current begin to drift them to the westward.

How to approach the land, or get to the eastward.

In the strength of the S. W. monsoon, ships should endeavour if the wind is steady betwixt S. E. and S. W. to make the Grand Ladrone bearing nearly North and never fall in with the islands to the westward; this is more necessary after the middle of August, when easterly winds are liable to prevail several days together, as they are, more or less, at all seasons. Ships that fall to leeward about St. John's, in September or October, generally make a tedious passage to Macao; for the pilots carry them close along the islands, where the freshes or current setting to the westward, oblige them to remain at anchor great part of the time. But as these freshes prevail only in shoal water, near the islands, ships which stretch well out into the open sea, and take every advantage of the favorable shifts of wind, will generally get more speedily to the eastward, than those which continue to work close in with the islands.

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## *ISLANDS, CHANNELS, BAYS, or HARBOURS, on the COAST of CHINA, EASTWARD of, and near CANTON RIVER; with DIRECTIONS for SAILING toward that RIVER.*

Geog. situ. of Grand Ladrone.

GRAND, or GREAT LADRONE, called by the Chinese TY-MAN-SHAN, is in lat. 21° 57′ 10″ N. lon. 113° 44′ E. or 12 miles East of Macao, and 30 miles East of Canton

Factories by mean of many chronometers.* It is a steep bold island, the N. W. part forming a round mount or dome, more elevated than the other part, that may be seen 9 leagues from the deck, and 14 leagues from the mast-head, makes it easily known: for none of the other islands have a similar appearance, although most of them are high: on the S. W. part there is a small bay, where the fishing boats take shelter in the N. E. monsoon. The island is about 2 miles in diameter, with a rocky aspect close to the sea, but it is safe to approach, the depths near it being generally 16 or 17 fathoms. Being the outermost island, directly fronting Canton River, it is used as a standard position by ships sailing to, or from that river; and with the Little Ladrone adjoining, and Potoe to the N. N. Westward, bounds the East side of the great channel, leading to the river and Macao Road.

LITTLE LADRONE, or POCKING-HAN of the Chinese, is separated from the West side of the Grand Ladrone, by a narrow passage, having 16 or 17 fathoms water in it, but too confined for a ship unless in a case of necessity. This island is of convex sloping form, not so much elevated as the former. Near the West side of it, the depths are 11 and 10 fathoms, decreasing gradually to 6 fathoms about ½ a mile to the southward of Potoe: there are 14 fathoms near its outer point, and near the South and S. E. sides of the Grand Ladrone, 17 to 18 fathoms. Little Ladrone. Soundings near them.

Close to the N. E. part of the Little Ladrone, lies a small rocky islet; and N. by W. from this islet about 1200 yards, there is a Black Rock, covered at high tide, with 10 fathoms close around: if therefore, a ship pass this way at high water, when the rock is covered, she must keep about mid-channel between the Little Ladrone and Tong-hou Island, which is 2½ miles more to the northward. This is the only danger near the Little Ladrone, excepting a high rock close to the shore on its N. W. side, having near it 9 and 10 fathoms water.

About 10 leagues South from the Grand Ladrone, the depths increase to 27 or 28 fathoms; about 20 leagues from it, to 42 and 44 fathoms; and soundings extend on the same meridian, to about lat. 20° N.; from hence, they continue westward on a parallel to Hainan Head; but converge toward the land, with deeper water to the eastward of the meridian of the Ladrone. Ships falling in with the land in thick weather, may easily distinguish whether the land seen, is the islands to the eastward or westward of the Grand Ladrone; for the Asses Ears and Lema Islands, have soundings of 23 and 24 fathoms very close to them on the outside; whereas, the islands betwixt the Grand Ladrone and St. John's, have only 10 and 11 fathoms at a considerable distance outside. These are also large, and of regular appearance, resembling a coast more than islands; but those to the eastward, (excepting the Great Lema which is long, and of an undulating form) are detached, high, and uneven. and in the offing. How to distinguish the land,

A ship falling in with the islands to the eastward, should if the weather is not very thick, push through some of the channels amongst them toward the river, which are in general safe, and may be navigated without a pilot; for by losing time outside, or close to the islands, she may be baffled by light winds and calms, which are frequently the harbingers of a Ty-foong. and proceed toward the river.

POTOE, or PASSAGE ISLAND, in lat. 22° 2′ 6″ N. bearing N. W. by N. from the N. W. end of Little Ladrone 4½ miles, is a flat sloping rock, visible about 3 leagues from the deck, with 6 or 6½ fathoms near it all round; it ought not to be approached too close, as the eddies occasioned by the Freshes, may render a ship ungovernable, and be liable to drift her toward it, or toward Woong-boo, the adjacent island. The channel betwixt it and the S. E. point of Montanha, is about 5 miles wide and very safe; the depth is 6 or 6½ fathoms in mid-channel, or rather nearest to Potoe, (which is the best track) decreasing over a bottom of soft ouze to 5½ or 5 fathoms, in steering N. N. Eastward for Macao Road; and there is 3½ fathoms close to the Point of Montanha. Potoe Island.

* Lieutenant Ross, in his survey, makes it 11 miles East of Macao, and 27′ 13″ East of the factory at Canton, or in lon. 113° 43′ E.

Remarks relative to making the coast, in different seasons,

During the strength of the S. W. monsoon, ships generally endeavour to fall in with the Grand Ladrone bearing about North or N. by E., and pass into the river by the western channel, between Potoe and Montanha; but late in the season, when the winds incline easterly, or at any other time when they are expected to come from the North or Eastward, it is prudent to make the Great Lema, and proceed in by that channel. When Ty-foongs happen on the coast, they generally commence in a moderate gale from northward, which is a leading wind for passing through the Lema Channel into the river; and as the wind commonly veers to eastward before it blows very severe, a ship may get well up the river above Lintin, with the first of the gale, where these storms blow with less violence, then outside among the islands.

and of sailing toward the river.

As the approach to Canton River is probably more safe than to any other large river on the globe, there being no sand banks at the entrance, and the channels amongst the islands outside being mostly all free from hidden danger, a stranger should not hesitate to push through the nearest convenient channel without a pilot, if the weather is tolerably clear; but the tides must be attended to, which set in different directions amongst the islands to the S. Eastward of the river, according to the prevailing winds; a strong easterly wind generally producing a westerly current or tide, which abates in strength when the ebb should be setting to the S. Eastward. If an outside pilot can be obtained at a moderate rate (12 or 15 dollars) he may be useful, to run the ship into some cove or place of shelter, should a storm approach, or if she is in a disabled state. A ship ought not to anchor in Macao Road, when there is an appearance of stormy weather, but she should run well up the river above Lintin.

Woong-moo Island and Dry Rocks.

About $1\frac{1}{2}$ mile to the E. N. E. of Potoe, lies an island $1\frac{1}{4}$ mile long, stretching North and South, with a peaked hill on its northern part; it is named WOONG-MOO, or WOONG-BOO, and nearly $\frac{1}{2}$ a mile off the West side of it there are some rocks above water. East-

Leung-neeb Island.

ward of Woong-moo $1\frac{1}{2}$ mile, is situated an island named LEUNG-NEEB, with a round islet between its South end and the western point of Tong-hou Island; not having passed between Potoe and the dry rocks, or between Woong-boo and Leung-neeb, the depth there is

Sunken Rocks.

not known: about $\frac{1}{2}$ a mile N. W. from the North end of Leung-neeb, lie 2 rocks covered at spring tides, which in blowing weather shew breakers; therefore, in passing the North end of this island, keep at least $\frac{3}{4}$ of a mile distant.

Ty-lo-chow.

TY-LO-CHOW, bearing from the North end of Leung-neeb N. $4\frac{1}{4}°$ E. distant $2\frac{3}{4}$ miles is high near the western part, sloping a little to the eastward, and it is the southern 1 of the range of small islands, on the East side of Macao Roads; it is $5\frac{1}{2}$ miles from Cow-ow (or South point of the Typa,) $7\frac{1}{3}$ miles from Cabaretta Point, and near 10 miles from Macao Town: between this island and Leung-neeb there is a good channel to enter the road from the S. E., remembering the rocks off the northern point of the latter, the depth from 1

Ty-lock.

to the other being 7 and $7\frac{1}{2}$ fathoms, decreasing to $4\frac{1}{4}$ fathoms in the road. TY-LOCK, about $\frac{1}{2}$ a mile to the northward of Ty-lo-chow is a small rocky island, having on its summit a large rock.

Samcock and Sylock.

SAM-COCK ISLAND, (South end) distant 1 mile in a N. N. E. direction from Ty-lock, is the largest of the range, of moderate height, and rugged appearance, in form of a pyramid: between this island and Ty-lock there is a small islet, named SY-LOCK, and 2 rocks above water; the channels between these are so narrow that a ship should not attempt them, and on account of the strong eddies, ships are very frequently ungovernable.

Channel between Samcock and Chung chow.

On the northern part of Sam-cock there is a small bay or cove for boats, and this island affords fresh water: about $\frac{1}{4}$ of a mile off the West point there are $3\frac{1}{4}$ fathoms, and the same distance off its eastern point there are only 3 fathoms water; therefore, in passing between

Sam-cock Island and Chung-chow to the North, keep in mid-channel, or nearest to the latter, in 6 or 7 fathoms water.

CHUNG-CHOW, distant about 1¼ mile to the N. N. E. of Sam-cock, is the northern island of the range, from which Cabaretta Point is distant 8 miles N. 88½° W., Macao Town N. 82½° W. distant about 10 miles, the outer of the Nine Islands near 7 miles distant, bears N. 51½° W., Lintin Point N. 16½° E. 14¾ miles; it is in lat. 22° 10′ 15″ N., and lon. 113° 43′ 50″ E.; the depth near Chung-chow is 7 fathoms to the eastward, and 5 and 6 to the northward and westward. Chung-chow. Geo. site.

Along the western side of this range of islands, the depth is 5 or 5½ fathoms, and on the eastern side it is 7 fathoms; the ebb runs strong from the northward along the West side of them, and the flood in eddies from the S. Eastward.

When Chung-chow is bearing N. 66° 51′ W., Ty-lock S. 68° 45′ W., summit of Ty-lo-chow S. 58° 24′ W., the centre of Sam-cock nearly West, and the small island which is off the N. W. end of Lueng-suitow, bearing N. 26° 8′ E. there is a small and dangerous NEEDLE ROCK, with 4 feet water on it at low spring tide, and 10 fathoms close around; it is distant from the nearest shores as follows:—from Chung chow 5900 yards, from a small island to the southward of it 2900 yards, from the South part of Lueng-suitow 8250 yards, and from the S. W. point of Laff-Sammee 4500 yards; when the island which is 3 miles to the S. E. by S. of Chung-chow named Chuck-tu-aan, and the small island off the West side of Lueng-suitow are on the same bearing, about N. N. E. ½ E. and S. S. W. ½ W., the rock will be between the 2, but nearest to the former; therefore, if a ship have occasion to enter the road by this channel, and keep about ¾ of a mile off Laff-Sammee and the South side of Lueng-suitow, she will pass in mid-channel, and have 10 or 12 fathoms water decreasing to 7 fathoms as she nears Chung-chow. Dangerous Sunken Rock.

SOUTHERN SIDE OF LANTOA CHANNEL, is formed by the following islands: LUENG-SUITOW, situated about 2½ miles to the S. W. of the South point of Lantoa, is high, and about the North point of it there is a peaked hill; this island is 1½ mile long, and has not any hidden dangers near its northern side; the depths between it and the South point of Lantoa are irregular, owing to strong eddies generally prevailing hereabout. There is 7 fathoms near to the point of Lantoa, 18 or 20 in mid-channel, and 28 or 30 close over to Lueng-Suitow; there is a cove for boats on the North side of the island, and at a very short distance to the westward of its westernmost point, there is a round and high islet with a large rock on its summit; round this islet to the northward and westward, the depth is 15 fathoms. From it, Macao Town bears N. 88° W., distant 13⅓ miles, the Nine Islands N. 70° W., distant near 10 miles, South point of Lantoa N. 73° E., distant 3 miles, and Lintin N. 1½° E., distance 13 miles; the South point of LINTIN SOUTH SAND is on the same bearing, therefore, you will be clear of it, if you keep this islet to the S. by E. until Lintin Peak bear N. by E. After coming through the Lantoa Passage, from this island the course into Macao Road is West, and if bound up the river your course will be N. N. W. until you bring Lintin Peak to bear N. by E., then steer for the West point of Lintin. In a dark night, steer N. N. W. or N. W. by N. from the middle of the Lantoa Passage until you have shoaled your depth to 6 fathoms, then North; on this latter course, if you deepen above 7 fathoms keep a little westerly until you arrive near or above Lintin, where you may anchor; by not deepening above 7 fathoms, you will not be too near Lintin South Sand, there being 9 and 10 fathoms close to it. The ebb tide, from the West part of Lintin to the eastward, sets South; but over on the western shore, it sets to the S. E. Lueng-Suitow. Lintin South Sand. Sailing directions.

GOW-TOW-CHOW, or BULLOCK'S HEAD ISLAND, situated next to the S. E. of Lueng-Suitow, is separated from it by a narrow channel; this island is small but high, Gow-tow-chow, or Bullock's Head Island.

and on the South side, it forms a bay with Lueng-Suitow, and Laff-Sammee. Although the channel is very narrow, H. M. Frigate, Doris, ran through, and found shoal water near to Lueng-Suitow; the depths near the North side of the island, are 15, 16, and 17 fathoms, rather irregular; but to the southward in the bay, 3, 4, and 5 fathoms. To the southward of Gow-tow-chow, and separated by a narrow channel, is situated the largest island of the 3, named LAFF-SAMMEE; which is inhabited on the S. Western side, where fresh water is to be had in a small bay; this island from some views forms a peak, which is in lat. 22° 8′ 30″ N., lon. 113° 48′ 40″ E. The depth on the North side in the Lantoa Passage is very irregular, from 17 to 25 fathoms in overfalls, about a quarter of a mile off, and on the South side 10 and 11 fathoms; a short distance to the eastward of its South point, there is a rocky islet, on which the fishermen have huts, and a winch for heaving up their nets.

Geo. site of Laff-Sammee.

Chi-chow Islands.

CHI-CHOW, largest island, the North point, bearing S. 84° E., distant near 10 miles from the South point of Lantoa, forms the South side of the East entrance of the Lantoa Passage. This island is high, of round appearance, inhabited on the West side, and separated by a narrow channel from the small Chi-chow Island, which is lower, and to the westward of the former; there is a safe channel of $1\frac{3}{4}$ mile between the West point of the small Chi-chow and the rocky islet that lies off the eastern side of Laff-Sammee; in this channel, the depth is 9 and 10 fathoms, and would be adopted by a ship bound up the river, when she enters the islands from the S. E. between Chook-chow and Ichow.

Achow Islands.

ACHOW,* southern island, bearing S. 53° E., distant near 4 miles from the South point of Lantoa, forms the North side of the East entrance of the Lantoa Passage. The South point of Achow is high, and rises very steep, having 7 fathoms water close to; the depths between it and Chi-chow are 11 or 12 fathoms in mid-channel, 13 nearly over to Chi-chow, deepening very suddenly to 25 or 30 fathoms into a hole, or swatch, close to the point of Chi-chow. On the North side of Achow, fresh water is to be procured, at a little sandy beach. A short distance to the northward of Achow, about E. S. E. $3\frac{1}{4}$ miles from the South point of Lantoa, there is another island, also named ACHOW; it extends East and West about 1 mile, and is very narrow in the middle: from the West side of this island a sand spit extends nearly West 2800 yards, and on the West point of this spit, there is $2\frac{3}{4}$ fathoms at low water, decreasing very quick to 2 and $1\frac{1}{4}$ fathom toward the island, off which it extends. When aground on this bank, a small islet, in a bay, on Lantoa, bore N. 63° E. touching the western point of the bay in which it is situated; South point of Lantoa N. 66° W., distant 3900 yards. There is a rocky islet and 2 rocks above water, situated between the 2 Achow Islands, nearest to the S. W. point of the northern 1; but they are not in the way of ships passing; there is also a high rocky islet, situated near a mile to the eastward of the Southern Achow, which may be passed at $\frac{1}{2}$ a mile to the southward, but the ground is foul between it and Achow, in 7 fathoms water, and by ships (entering the Lantoa Passage) must be left to the northward.

Northern Achow Island.

Lantoa Passage.

LANTOA PASSAGE, the eastern entrance, formed between the islands Chi-chow to the southward, and Achow to the northward, is generally used by ships which arrive during the N. E. monsoon. From about 1 mile off Pootoy Island, in the Lema Channel, a ship's course toward the Lantoa Passage is nearly West 20 miles; in this run, she will pass to the northward of Linting† Island and to the southward of Lamma, decreasing the depth of water from 17 fathoms off Pootoy, to 12 and 13 after passing Linting a short way; then to 7 or 8, as she approaches the Lantoa Passage; and when in the entrance, she will have 12 fathoms

Directions for sailing through.

* Called Socko-chow by some navigators.
† Called also Ling-ting.

in mid-channel, but by keeping nearest to Achow will have 7 or 8 fathoms. In the night, it will be proper not to come nearer to Lin-ting than 1½ mile when passing, as there are 2 *small rocks* above water, the outer 1 bearing E. N. E. from the North end of Lin-ting, distant ¾ of a mile, the other lies S. by W. from this about ⅓ of a mile; the depth near them is 13 fathoms.

When coming from the eastward Chi-chow has a remarkable appearance, and is a good guide; it appears like a high round island detached, and distant rugged land to the westward of it (which is Laff-Sammee and Lueng-Suitow). Having entered the Lantoa Passage to the eastward, the course through it is N. W. by W. and the depth will be variable, not under 8 or 9 fathoms, or above 25 fathoms; this inequality may be owing to the ebb tide running in strong eddies, particularly in July and August, when its velocity is sometimes 4½ knots per hour on spring tides. With a light breeze, at times, it is very difficult to manage a ship hereabout; on some occasions, 2 or 3 boats (assisted by the sails,) have been baffled in their attempts to tow a ship's head round.

The generality of pilots, speak of a danger said to be in this passage, but few of them can point out where it is. I have passed over most part of the ground, (says Lieut. Ross) and know of no danger existing in the channel, but the spit of sand that runs off the West side of the northern Achow Island. I have been twice aground on this sand; if it is necessary to turn through the passage, when standing to the northward do not decrease your depth under 7 fathoms, in a large ship, nor pass the line of bearing between the South points of Lantoa and the southern Achow Island. There is a good channel 1 mile wide, between the Northern Achow Island and Lantoa shore, which may be adopted by a ship when it is blowing fresh from the North; in this case, instead of passing nearest to Lin-ting when coming from the eastward, you should pass nearest to the South point of Lamma in 12 fathoms, then to the South point of Chung-chow in 8 fathoms, also pass another high island that is to the westward of Chung-chow in 7 fathoms, afterward between the Lantoa shore and the Northern Achow Island, carrying 7 fathoms water. In this run, after passing the island that is a short distance to the westward of Chung-chow, you will perceive a *small rocky islet* in a bay, on the northern shore; you may stand through the channel steering West, until the islet is shut in behind the western point of the bay in which it is situated, when you may keep toward the South point of Lantoa, and have 4½ fathoms muddy ground between the point of the sandy spit and the Lantoa shore. It is high water on full and change of the moon, at 10 hours, off the South point of Lantoa.

Channel to the northward of the Achow Islands.

LANTOA, or TY-HO, extends in a N. E. by E. and S. W. by W. direction 15 miles, and its greatest breadth is about 5½ miles; the South or S. W. point is in lat. 22° 12′ N., lon. 113° 50′ E., the N. E. point in lat. 22° 21′ N., and lon. 114° 2′ 35″ E. The only fortification perceived on the island, was a small fort, situated on a hill a very little way to the eastward of the South point. On the western side, 1¼ mile from the South point, and situated near the shore, there is a peaked hill, which at high water is insulated; from this hill to the point, there is a mud flat extending about ⅓ of a mile from the shore, with only 2 fathoms water; therefore, in passing this part, do not decrease the depth under 7 fathoms, as you will shoal fast from 17 to 7 fathoms near the edge of the flat. About 1 mile to the N. N. W. of the peaked hill, and ¾ of a mile off the nearest shore, there is a Rock *above water*, having near it 15 fathoms: between this rock and the shore, there is 7 fathoms, decreasing very quickly toward the latter; from the rock Lintin Peak bears N. ½ W., distant about 10½ miles, and Macao S. 80¼° W., distant 15¾ miles. To the N. E. by N. of the rock 1¼ mile, there is a bluff point, and to the East of the latter, a bay, in which is situated the village TY-HO; where is a creek or rivulet, into which a boat may go at high water. To the southward of Ty-ho village, there are 2 bays, both of which are very shallow, but fresh water is to be procured in them. Between the Dry Rock and the Bluff Point, in 7

Geo. site of Lantoa; its adjacent islands, and dangers.

fathoms water, Lieut. Ross, rode out a severe Ty-foong on the 28th of July, 1811, with yards and topmasts struck, and did not experience any swell, nor had occasion to veer out more than $\frac{2}{3}$ds of a cable, whilst H. M. S. Clorinde, in Macao Road, experienced very rough riding; this Ty-foong did a great deal of damage to the quay round the Praya Grande, and otherwise much injured Macao: although very severe, it must have been confined to a small space, as a ship arrived the day after it broke up, and had not experienced any bad weather.

On the North side of Lantoa there are 2 projecting points, from the western 1, Lintin Peak bears N. $36\frac{3}{4}°$ W., and the island named Saw-chow N. $7\frac{1}{2}°$ W. distant $2\frac{3}{4}$ miles; between the 2 points, which are $\frac{3}{4}$ of a mile asunder, there is a bay, and a village named Saw-lowang, and directly fronting the eastern point of the bay, there is a small island about $\frac{1}{4}$ of a mile distant, having a rock just awash a little way to the northward of it; between this island and Saw-chow, which is 2 miles distant to the N. N. W., the depth is too small for a large ship at low tide; toward Saw-chow is the deepest water, $3\frac{3}{4}$ and 4 fathoms, shoaling as you near the Lantoa shore to 3 and $2\frac{3}{4}$ fathoms, on a very soft muddy bottom. To the eastward of the small island off Saw-lowang Bay, there is another deep bay, formed by an island extending North and South $1\frac{3}{4}$ mile; in this bay is situated Toong-choong village, which was the place where the Portuguese ships attacked the piratical fleet in 1809. The N. E. point of the island, has a very remarkable rocky appearance, and is frequented by a company of stone-cutters, who cut the Granite Rocks into slabs for building; Chee-lap-cock, is the name of its N. E. point. The South point of this island is so near the Lantoa shore, that in passing you cannot distinguish it to be an island; in Toong-choong Bay, the water is shoal, being only 2 and $2\frac{1}{2}$ fathoms. The northern shore of Lantoa, from Toong-choong Bay, is not inhabited, and there is little water near the island aforementioned.

About $1\frac{1}{3}$ mile to the E. N. E. of Cheelap-cock Point lies a small green island, and $\frac{3}{4}$ of a mile farther to the E. N. E. another small island, which are the Brothers of Mr. Dalrymple, or Motoe of the Chinese: there is a rock above water, about half a mile to the southward of the eastern island, and about 1 mile off the Lantoa shore. The depth near the Brothers, is 7 and 8 fathoms, shoaling from the North 1 toward the northern shore into 4 or 5 fathoms, making the channel narrow hereabout: there is a small reef round the western side of the West Brother. From the Eastern Brother the N. E. point of Lantoa bears E. by N. 4 miles.

The N. E. point of Lantoa forms the South part of what is termed the CAPSING-MOON PASSAGE, being about $\frac{3}{4}$ of a mile in breadth hereabout.

About half a mile to the N. E. of the North point of Lantoa is situated Mah-wan Island, forming a channel between it and Lantoa, and another to the northward between it and the northern shore: both these passages are unsafe for a large ship to sail through, being very narrow and having deep water; the depth in them is 25 fathoms, and you will have to guard against *some rocks* that project off the N. E. point of Mah-wan Island about $\frac{1}{3}$ of a mile. H. M. S. Doris, however, went through between Mah-wan and Lantoa.

The southern part of Lantoa Island, is formed by several small bays with shoal water in them; the largest 1 is situated to the N. E. of the Northern Achow Island, where there is a small islet, and some rocks above water. The depth is 2 fathoms within the rocks, and there is a considerable village in this bay. Off the eastern point of Lantoa, and separated from it by a narrow channel, there is a high green island, which bears from Lin-ting Island N. 26° W., distant $5\frac{1}{2}$ miles, and close on the West side of the island, lie some rocks above water; a small ship would find good anchorage by running round to the westward of these rocks, and anchoring with them bearing about S. by E., $\frac{3}{4}$ of a mile distant, in 5 fathoms water: fresh water is to be procured at the sandy beaches on Lantoa, situated near, and to the northward. In the channel formed between Lantoa and the island, there is 7 fathoms water; the ebb tide runs here, to the eastward.

Geo. site of Lantoa West Peak.

About the centre of Lantoa, the land is very high, making in peaks, the highest and west-

ernmost of which, about 3000 feet high, is in lat. 22° 15′ 15″ N., lon. 113° 54′ 15″ E., and bears from Macao N. 80° E., distant 20¾ miles.

SAW-CHOW, in lat. 22° 21′ N., bearing S. E. from the East side of Lintin, distant 5 miles, is a small island 1 mile long, and narrow, with a sharp hummock on its North end: to the northward of Saw-chow, about 1 mile distant, there is another island, higher, and more rocky in its appearance, named TOON-QUOO: and to the S. W. of the South point of Toon-quoo, and N. W. of the North point of Saw-chow, there are 2 *rocks above water*, about a mile distant from each island: the western rock is very white, and named PAUK-PYAH. The depth on the eastern side of Saw-chow and Toon-quoo, is from 5 to 7 fathoms, and immediately from the South point of the latter to the North point of the former, the depth is only 2½ fathoms at low water; to the westward of Toon-quoo, the depth is 6 fathoms, and near the rocks there are 5 fathoms: the channel between Pauk-pyah and the East side of Lintin* spit is 3 miles wide, with 7 and 8 fathoms, decreasing toward the spit to 5 fathoms. If working to the northward between Lintin Spit and Pauk-pyah Rock, do not stand so far West as to shoal to 5 fathoms, or to bring the East side of Lintin to bear North. With the peak of Lintin bearing North, and Saw-chow East, there is 2½ fathoms on the spit. With Saw-chow bearing E. N. E. and Lintin Peak North, you will cross the spit 5 miles from Lintin, in 4¾ or 5 fathoms sand and mud. Having described the islands and channels to the eastward of Macao Road, it is necessary to return to those in the offing.

Saw-chow Island. Toon-quoo Island. Pauk-pyah Rocks. Lintin Spit.

ASSES EARS, or KY-POONG, in lat. 21° 54′ N., lon. 114° 1′ E. bearing from the Grand Ladrone E. 10° S. distant 17 miles, is formed at the West part by 2 high remarkable peaks, which make it easily known; rising from the same base almost perpendicularly from the sea, and sloping suddenly down on the N. E. side, they are united to a piece of moderately elevated land, which terminates that part of the island. A range of islets project from it about 6 or 7 miles to the S. Westward; the outermost of these called Gap Rock, from a small gap in it, but Man-mee-chow by the Chinese, is the southernmost islet on the coast, to the eastward of Canton River. Betwixt the Gap Rock and Asses Ears, there is an opening nearly a mile wide in this range of islets, which is safe to pass through with a steady wind: the Gunjavar had 17 and 18 fathoms mud, passing through it in 1802. Off the N. E. end of the Asses Ears, there is another group of islets called the White Rocks, which bound the S. W. side of the channel formed between them and the Lema Islands: there is said to be a passage betwixt the northernmost of the White Rocks, but it must be narrow, and ought not to be attempted unless from necessity; for some of the rocks are small, with the sea breaking high against them at times. The channel betwixt these rocks and the Lemas, is about a league wide, with 20 fathoms water in it, and very safe.

Geo. site of the Asses Ears. and the adjoining islets.

TONG-HOU, bearing N. N. E. distant about 2½ miles from the Little Ladrone, and North from the channel between the 2 Ladrones, is of moderate and unequal height, nearly 2 miles long N. W. and S. E.: on the N. E. part of this island, is a small cove into which the Boddam ran when disabled; it is so small as not to be readily distinguished if you are passing at 2 or 3 miles from it entrance. There is a sunken rock situated off the N. W. point of the cove, and when passing this part of the island, it will be avoided by keeping about ¾ of a mile off shore. Close off the West point of Tong-hou, and near the South point of Leung-neeb Island, there is a *small round island*, making the passage on each side of it very narrow: the depth about ½ a mile off the North side of Tong-hou is 7 or 8 fathoms.

Tong-hou Island and Cove.

The Boddam, after being disabled by the loss of her masts and rudder, during a Ty-foong, and having fixed temporary ones, was proceeding toward the river, when the pilot perceiving

* Or South Sand.

another Ty-foong coming on, ran her into Tong-hou Cove. She drew 21½ feet water, and remained in perfect safety during a violent storm. The cove is about 400 yards wide, with 24 feet water in the entrance, 17 and 18 feet well inside, at low water spring tides, the bottom all soft mud. Here, a ship may lie with a kedge anchor, or be run into the mud without any risk, if she has none; the tide rises 9 feet, and it is high water about 6½ hours on full and change of the moon: outside, the flood sets N. W. and the ebb S. E. pretty strong, but there is scarcely a drain in the cove. On each side, the land is steep from the water's edge, terminating in a valley at the head of the cove, where there is a sandy beach, and plantain trees. Good water may be got here, also beef, fish, poultry, and some fruit; being the chief rendezvous of the fishing boats in bad weather, or a place of refuge from the Ladrones, it is protected by a fort on the N. W. point of the entrance. The rocks that lie along the N. W. side of the cove, have 12 feet mud within 3 or 4 yards of them.

How to sail into the cove. In steering for the entrance of this cove, a sunken rock must have a birth, which lies in about 6 fathoms water, and 1½ cable's length to the N. Eastward of the Fort Point; when the head of the cove bears S. W. by W., the rock will be left to the N. Westward. Having brought the cove fairly open, bearing S. W. by W., steer for the point on the S. E. side of the entrance, and pass it within ½ a cable's length, for the N. W. point where the Fort is built, is encompassed by rocks. There is also a reef of rocks, about 2 or 3 cables' lengths to the S. E. of the entrance of the cove, which stretch out between 1 and 2 cables' lengths from the S. E. part of the island; these are mostly all in sight at high water, consequently easily avoided, by steering from the offing directly for the S. E. point of the entrance, as directed above.

From the entrance of Tong-hou Cove, I-chow and Samoan Islands are in 1 bearing E. 1½° N. to E. 7° N., Lin-ting from E. 10° N. to E. 15° N., Lantoa Peak N. 40° E., Lintin Peak N. 12½° E., Sam-cock N. 2° W. to N. 8° W., Ty-lock-chow N. 11° W. to N. 17½° W., Macao N. 40° W. distant 5 or 6 leagues.

Pak-leak-low. PAK-LEAK-LOW, N. E. by N. of the Grand Ladrone about 1½ mile, is of irregular shape, and on the southern side, the hills are much covered by black rocks; on the East side of this island, and fronting a small island named Hoa-ock-chow, there is a cove in which the fishing boats find shelter; on the northern side, are some small indentures or bays, in which fresh water may be procured; and near to the N. E. point of the island, there is a rocky islet on which the fishermen have a hut and a fishing stage erected. On the N. E. point of the island, stands a remarkable mount or hill, which is visible from Macao nearly on with Cabaretta Point. To the southward between Pak-leak-low and the Grand Ladrone, the depth is 15 fathoms, and the channel between it and Tong-hou Island is nearly 4¼ miles broad, with 10 fathoms between the 2 points, shoaling to 7½ as you proceed to the northward: from 7 fathoms about ¾ of a mile off the North side of the island, you will increase the depth toward the shore to 12 or 13 fathoms, and near the small islet which is off the N. E. point, you will have 15 fathoms water to the northward and eastward.

Hoa-ock-chow. HOA-OCK-CHOW, is a small island, situated about ¾ of a mile from the East side of Pak-leak-low, with 15 and 16 fathoms water round it.

To the eastward 1½ mile from the small rocky islet that lies off the N. E. point of Pak-leak-low, there is a small island, and close to the eastward of this, another, which is larger; and off the S. E. point of the latter there is a *high rocky islet:* the largest of the group, CHOOK-CHOW, forms a small bay on its North side; there are 15 fathoms water between Hoa-ock-chow and the western island, and 11 and 12 to the northward of the group; from the N. E. point of Chook-chow, Macao Town bears N. 58° W. distant 19⅓ miles, and on a clear day, may be distinguished just clear of Cabaretta Point: from the East point of Chook-chow, the small and southernmost islet or rock, Man-mee-chow, bears S. 28° E. dis-

tant 12½ miles; the *white rock* that is in the channel between the Lemas and Asses Ears bears S. 72° E. distant 13 miles; and the peak of the western I-chow Island N. 60½° E. distant 4½ miles.

TWO HIGH WHITE ROCKS, separated ½ a mile, the southern 1 is in lat. 22° 4′ 40″ N. from which the following bearings and distances were obtained, N. E. point of Chook-chow S. 25¼° E. distant 4½ miles, peak or highest part of Tailo-chow N. 73° W. distant near 6 miles, North point of Leung-neeb Island, S. 80° W. distant 6 miles, southern part of eastern Chi-chow Island N. 63¼° E. distant 5½ miles, western I-chow Island, S. 72½° E. distant 6 miles. About 1500 yards to the S. E. of the Southern Rock, there is a SMALL BLACK ROCK, only visible at low spring tides, having 10 fathoms water close around; and between the 2 high rocks, but a little more westerly, there is a *smaller one* above water; the depth near these rocks on the East side is 9 or 10 fathoms, on the western and northern sides 8 fathoms. If coming from the South-east between Chook-chow and I-chow, you will avoid these rocks in the night, by keeping about a mile or two off Chook-chow; but in fine weather, you will see the rocks time enough to go clear of them. In the space between Chook-chow and the rocks, the soundings are from 10 to 13 fathoms, deepest near the former, and between them and the South end of Laff-sammee (which is distant 2½ miles) there are 8 and 9 fathoms water.

Two White Rocks.

Sunken Rock.

I-CHOW, the eastern or largest island, is in lat. 22° 3′ N. lon. 113° 54′ 45″ E., the smaller 1 being separated from the West side of the former, by a very narrow channel, which you can only distinguish when to the southward of them; the depth on the southern side of these islands is 15 fathoms, and on the North and East sides 12 and 13 fathoms, on the West side 8 or 9 fathoms. The peaked or highest part of the eastern island bears N. 49° 18′ W. distant 10 miles from the white rock which is in the channel to the northward of the Asses Ears. To the N. N. E. distant 1⅓ mile from the northern part of the eastern I-chow, there is situated a *small rocky islet*, with 12 and 13 fathoms water at a short distance from the rocks that are round it. SAM-MOON, N. W. end, is situated 1½ mile to the eastward of the above rocky islet, which are a group of 3 small islands extending about 3½ miles in a N. W. and S. E. direction, with narrow passages between them; near the N. W. end, there are 2 peaked islets, and on the northern side, between the eastern and middle islands, there is another high rocky islet, with a bed of rocks lying to the southward of it; the South end of the eastern island, is the highest part of them, and forms a round mount. These islands are to the N. W. of, and directly fronting the channel which is to the southward of the Lemas.

You may pass to the southward of them, or to the northward between them and Linting Island, in 12 fathoms water.

Geo. site of I-chow.

Sam-moon Islands.

LIN-TING, or LING-TING ISLAND, in lat. 22° 6′ N. lon. 114° 1′ 30″ E. bearing N. 80° 22′ W. distant 15¾ miles from the North end of the Lema Island, is of rugged appearance, about 1¼ mile in diameter, rising to a peak about its centre; the dangers near this island (already mentioned) are 2 rocks above water, about ¾ of a mile to the eastward of the N. E. point; they bear N. by E. and S. by W. of each other ¼ mile, with 13 fathoms water near, but foul ground between them.

Geo. site of Linting Island.

NEEDLE ROCKS, are 2 in number, situated within a few yards of each other, bearing S. 41° W. from the low rocky N. W. extreme of Linting Island, and are so sharp, that it is difficult to keep the lead fixed on their points; at low spring tides there is about 6 feet water on them, at which time with a swell, may probably shew either breakers or a rippling. His Majesty's ship Doris, having got on these rocks, and reported their distance to be ½ a mile off the shore, induced Lieutenant Ross to examine them; and from the outer rocks, he found

Needle Rocks.

the most southern extreme of the Lemas was just shut in behind the S. W. point of Linting, and the highest part of Lamma a very little way over the low N. W. point; the distance carefully measured, was $1\frac{1}{2}$ tenth of a mile, or $1\frac{1}{2}$ cable's length from the low N. W. point of Linting, and there are 10 fathoms water close round the rocks. A ship will avoid them when passing round Linting to the westward, by keeping the southern extreme of the Lemas a little open of the S. W. of Linting, and do not go within $\frac{1}{2}$ a mile of the low rocky point of the latter. From the North point of Linting Island, the South point of Lamma Island bears N. 45° E. distant $5\frac{3}{4}$ miles, and the East entrance of the Lantoa passage W. by N. distant about 8 miles: the depth close to the North point of Linting are 18 or 19 fathoms, decreasing to 14 and 15 about 1 mile distant, and to the South and West of the island, there are 10, 11, and 12 fathoms water on a soft bottom; in the night, when passing this island to the northward, it is advisable to keep 1 or 2 miles off, on account of 2 rocks, the northern 1 of which bears from the brow of Linting North point N. 74° E., and the southern 1, E. 2° 9′ S.

Chung-chow. CHUNG-CHOW, distant 5 miles N. by W. from Linting Island, and situated near the S. E. part of Lantoa, is rather high on the North and South sides, and by having a bay on the East and West sides, the island is low and narrow in the middle; in this low part there was a considerable village, where a number of boat-builders resided, to make or repair fishing boats, which the pirates destroyed, with its inhabitants: nearly $\frac{1}{2}$ a mile to the East of the eastern point of the island, lies a small rock, covered at times, the depth nearest to it, 7 or 8 fathoms. In an easterly gale, a small ship, by running round to the westward of Chung-chow, and anchoring in the western bay, in $3\frac{1}{4}$ fathoms, will be well sheltered: there is no danger in passing the South point of this island, there being 8 fathoms water close along the shore, and 5 and 6 near the western part. Fresh water may be procured at the western bay.

Islands near the eastern part of Lantoa. From Chung-chow to the northward, and situated a short distance from the Lantoa shore, there are *several small islands*, with *some rocks above water*; the channels between which and the Lantoa shore, are narrow, shoal, and unfit for ships.

Geo. site of Lamma Island. LAMMA ISLAND, the S. W. point, in lat. 22° 11′ 10″ N. and $5\frac{3}{4}$ miles to the N. E. of Linting Island, is of rocky appearance; from this point, the land runs in a N. E. direction about $3\frac{1}{4}$ miles, and is higher hereabout than on any other part of the island. The middle of Lamma, is narrowed by a deep cove on its N. E. side, and a bay on the S. W., so that, between them, the land is not more than a $\frac{1}{4}$ mile broad. The North end of the island, is in lat. 22° 15′ N. and not more than a mile distant from Hong-Kong. From the S. W. point, along the western shore, the land forms a bay to a low projecting point, situated about $2\frac{1}{2}$ miles to the N. N. W., and from this last point about $1\frac{1}{4}$ mile to the N. E. there

Sunken Rocks. is another point, off which lie some ***Rocks under water*** $\frac{1}{2}$ a mile off shore; between these 2 points, some houses, and cultivation are seen in the little bays. The point off which the rocks are situated, is of rocky appearance, rather bluff, with houses in the bays to the southward of it and the low North point of the Island, extending to the N. E. of it.

The S. E. point of Lamma Island is remarkable, from its being a small round hummock, of a bright green appearance on the top, and very rocky near the water's edge; this part of the island, as far as the N. E. point, is rocky close to the shore, with 13 or 14 fathoms water $\frac{1}{2}$ a mile off.

On the N. E. side of Lamma Island, a little way to the westward of its N. E. point, there is a cove about $1\frac{1}{2}$ mile deep and $\frac{2}{3}$ of a mile wide, the bottom of which is rocky; but

Shelter and safe anchorage. a ship may go into 6 or 7 fathoms water about $\frac{3}{4}$ of a mile in, and ride in security, being land locked. There is an island situated near 2 miles from the N. E. point, close to the western point of the cove, and the channel between this island and Hong-Kong is 1 mile wide. You may anchor in a good situation between the island and the North point of

Lamma, in 7 or 8 fathoms water, and be sheltered from all winds: and the few inhabitants of this island were very civil, when Lieutenant Ross visited their habitations. On the North point of the island, there is a hut and a winch erected by the fishermen, who will dispose of fish at times.

In the channel between Lamma Island and the southern side of Hong-Kong, the depth of water is 17 fathoms in mid-channel, having no dangers in it but what may be seen, namely, a rock and a small island above water, lying close to the mouth of a cove situated on Hong-Kong.

On the western side of Lamma, between it and the islands situated off the East side of Lantoa, the depth is generally 5 fathoms on a mud bottom, and when coming from between Lamma and Hong-Kong, you will decrease very rapidly to 5½ fathoms after passing round the North point of the former.

HONG-KONG ISLAND, the N. W. point, in lat. 22° 17′ N. bears from the North point of Lamma nearly North, distant 2 miles; a short distance N. W. of the point, there are 2 small islands of green appearance, the westernmost of which is highest; and 1¾ mile farther to the westward of this last mentioned island, there is another high green island named Cow-ee-chow, forming between them the Cow-ee-Passage, having in it 10 and 12 fathoms water. Hong-Kong Island, southern side.

The S. W. point of Tytam Bay, in lat. 22° 12¼′ N. and lon. 114° 12′ 40″ E. is the most southern point of Hong-Kong Island; between this point and the N. W. end of the island, there are several small bays, all of which are safe for small ships, but would seldom be resorted to, when there are much better places of shelter near them. About 1 mile to the E. N. E. of the N. E. point of Lamma, there is a small, but high island, of bright green appearance, between which, you will have 13 and 15 fathoms water, and 20 fathoms very close to the eastward of Lamma point: in the small bays of Hong-Kong, northward of the green island, the depth is generally 7 or 8 fathoms, and fresh water may be procured at the beaches. Geo. site of the S. W. point.

About 1 mile N. E. by E. of the North point of Lamma Island, and near the western point of a deep cove on Hong-Kong, there is a cascade of very good water, convenient to be obtained: a short way to the S. E. of the cascade, directly opposite to the mouth or entrance into the cove, Lo-chow, a small rocky island, is situated, and a ***bed of dry rocks*** near it: to the S. E. of the island, the depth near it and the rocks is 12 or 13 fathoms; and the cove, in which you have 7 and 8 fathoms water, may be useful to careen in. About the southern side of Hong-Kong Island, a ship could procure very clean and good shingle ballast; and no doubt the fishermen might be engaged to bring it off to her, so as to ballast her in 1 or 2 days.

TYTAM HARBOUR, or BAY, called also HONG-KONG HARBOUR, the S. W. point bears N. 64° E. from the North point of Linting distant 11 miles, and is 1⅓ mile to the N. N. W. of the dry rock situated off the western side of Lo-chow Island; the point is high and bluff with 13 or 14 fathoms water near it: from this point, the land to the westward runs in a northerly direction, and forms a small bay in which there is a town, or village, named Tytam. The harbour is to the eastward of the point, from which the land stretches nearly North ¾ of a mile to a small sandy beach, with a Rocky Islet fronting the beach; from this islet, the land forms a round projecting point of the harbour about ¾ of a mile to the northward of the islet, when a bay, with a sandy beach, forms the western side of the harbour, where you may obtain fresh water and be at a short distance from the village Tytam. The eastern side of Tytam Harbour, is formed by the S. E. point of Hong-Kong Island, off which there are 2 green hummocks or islets, about 1¼ mile to the northward of Lo-chow Island. The harbour is a mile wide, the eastern shore trends N. by W. about 2 miles, and terminates the head of the harbour in the form of 2 coves, of which, the 1 to the N. W. is Ty-tam Harbour.

shoal and rocky; and here is a rivulet of fresh water, inconvenient to be procured when the tide is low. Tytam harbour, is free of danger, and the depth is 6 or 7 fathoms well in.

Directions for sailing into it. If you are to the eastward of Waglan with the wind from eastward, and wish to proceed to Tytam Harbour, you may either pass to the northward of Waglan, Soon-koo, and Lo-chow Islands, through the ***Sing-shee-moon Passage***, or to the southward of these islands into the ***Lema Channel***, then round the ***dry rocks*** that lie to the westward of Lo-chow. But the passage to the northward of the islands, being the shortest route, is preferable, and after opening the harbour, you may haul to the northward in what birth you think proper; whereas, by going round to the southward, if the wind be northerly, it is very probable you may have to turn in. If you adopt the Sing-shee-moon Passage, pass Waglan and Soon-koo at about $\frac{1}{2}$ or $\frac{3}{4}$ of a mile to the northward, and steer for the channel, which you will perceive to the westward, formed by the high island of Lo-chow to the southward, and the 2 green islets off the S. E. point of Hong-Kong to the northward: in this track you will carry 17 and 16 fathoms from Waglan, and by keeping in mid-channel, will have 27 and 30 fathoms water, deepening as you near Lo-chow; and shoaling to 12 or 13 fathoms as you near the islets; you will decrease the depth very fast to 10 or 11 fathoms when about 1 or $1\frac{1}{2}$ mile to the westward of the 2 islets, and will then have the harbour open to the northward of you, and may steer up the middle of it. In a large ship, anchor in 7 or $6\frac{1}{2}$ fathoms, about 1 mile to the N. N. E. of the small rocky islet, which you will see on the western shore: in this situation, you will be well sheltered from all winds, except what may come from South, which cannot affect you much, as the islands and rocks contiguous to the entrance, prevent any swell from rolling in. This harbour would be very useful to a ship, in the event of her being near Waglan at the close of the day, with the probability of a dark and tempestuous night; by running in here, she will at any rate be snug, even if a ty-foong should happen during the night.*

There is very little tide in the harbour, and like all the places hereabout, it is difficult to fix the time of high water, owing to the variety of channels, and the wind greatly influencing the tides; but its rise and fall is about 7 or 8 feet on spring tides, and on the neap not above 3 or 4 feet. A short distance to the eastward of the S. W. point of the harbour, there is a small sand bank, with 7 fathoms water on it, and 10 or 11 all round. A ship can procure very good shingle ballast in this harbour. The eastern shore is very rocky near the water side, but the rocks do not project far from it. The depth between the S. West point of the harbour, and the large rocks off Lo-chow Island, varies from 13 fathoms off the former, to 21 near the latter; the ebb tide sets through between Lo-chow and Hong-Kong to the eastward.

Pootoy. NORTHERN SIDE OF THE LEMA CHANNEL, is formed by the following islands: Pootoy, bearing from the N. E. end of Great Lema Island N. N. W., distant about 6 miles, being the southern 1 of the group which forms the northern part of the channel, through which ships endeavour to pass when coming from the East, toward Macao; it is of moderate height, the appearance in general barren, there being only a small quantity of brushwood in the vallies. About the western part of the island, there is a cove for boats,

Lema Channel. with a small rocky islet. Near the entrance of the Lema Channel, the depth of water between Pootoy and the North end of the Lemas, is 16 and 17 fathoms, increasing to 18 nearest to the latter: during the S. W. or westerly winds, a ship will sometimes find it very difficult to enter this passage from the eastward, by turning through, as there is generally a set from West to East, occasioned by the ebb coming from the westward out of the numerous

* The Lady Washington, American ship, moored in this harbour, about 25 years ago, when she filled up her water, and procured some hogs, poultry, and fish. It was explored in 1760 by Felis Mendoza, who makes the entrance to stretch North, with 12 fathoms water in it, and from 10 to 8 fathoms inside.

channels, and the flood coming in from South West; if it blow strong at S. W., the velocity of the current is about 1½ knot per hour to the eastward, only slacking a little when it ought to change its direction. A short way to the N. Westward of Pootoy, and West of Lo-chow ½ a mile, there are some large rocks well above water, having no hidden dangers near them; and Tytam Harbour, is North of these rocks. Dry Rocks.

LO-CHOW, separated by a narrow channel, and lying to the northward of Pootoy, is a high island flattened at the top, very steep all round, and about the N. Western brow of it, there is a small peak with a few large and remarkable rocks on it; this fronts Tytam Harbour, which is situated on Hong-Kong, at a short distance to the northward. SOON-KOO, situated to the N. E. of Pootoy, and about East 1⅓ mile from Lo-chow, is a small, but high island, rising to a peak near the centre; and near the north western part of it, there are some rocks well above water. WAGLAN, in lat. 22° 11′ 44″ N., lon. 114° 17′ 50″ E., bearing N. 4° 24′ W. from the N. E. end of the Lemas, distant 6¾ miles, and East from Soonkoo Island nearly 1 mile, is a small, but remarkably barren rocky islet, which is the eastern island of this group, having 16 and 17 fathoms water at a small distance round it to the eastward. Lo-chow. Soon koo. Waglan.

SINGSHEE-MOON,* is the channel formed between the North part of Lo-chow Island and the S. E. point of Hong-Kong, and although narrow, is perfectly safe, the depth near the 2 green hummocks being 13 or 15 fathoms, deepening to 27 fathoms in mid-channel, and 35 fathoms close to the North part of Lo-chow. Singshee-moon.

LEMA ISLANDS,† consist of 3 large, and 1 small island, extending in an E. N. E. and W. S. W. direction 12½ miles; the largest island, called the Great Lema by Europeans, but TAM-QUOON-TOW, by the Chinese, its N. E. end is in lat. 22° 4′ 45″ N., lon. 114° 18′ 30″ E., being 35½ miles East of the Grand Ladrone; this island is 6 miles long, and 1½ broad, of moderate height and undulating appearance, separated from the middle 1 named Ya-chow, by a narrow channel nearly ¾ of a mile broad, in which there are 18 and 19 fathoms water. Lema Islands. Geo. site of Tam-quoon-tow.

YA-CHOW, is the middle or highest Lema Island, and from most situations, appears flat on the top; close to its N. W. part there is a small rocky islet, which is distinctly seen when you are to the eastward, abreast of the passage named Yat-moon. Ya-chow.

EEE-CHOW, is the third or southern of the large islands, separated from Ya-chow by a narrow channel named Eee-moon, having 29 fathoms water in it. Eee-chow, forms more of a peak than either of the other 2, and has a point projecting to the westward with a hummock on it; and to the southward of this point, there is a Small but High Island, having a narrow channel between it and the South point of Eee-moon; this small island forms the northern side of the channel which is between the Lemas and Hy-poong, on which the peak named Asses Ears is situated. The small island may be considered as the Southernmost Lema Island, and is in lat. 21° 58′ 40″ N., lon. 114° 7′ 25″ East. The southern sides of the Lema Islands, are all steep and rocky, not affording a single bay even for a boat to take shelter in, and have 22 or 23 fathoms about 1½ mile off them. On the northern sides of the islands, the depth is generally 15 or 16 fathoms close to the shore. Ships in the N. E. monsoon should endeavour to pass between the North end of these islands and Pootoy, which is Eee-chow. Geo. site of South Lema.

* Moon, in Chinese, signifies a gateway, pass, or entrance.

† These are the outermost islands of the great archipelago that fronts the entrance of Canton River, as the coast and islands inside of the Great Lema, trend northward, forming a deep concavity about N. by E. from the East end of that island.

to the northward of it; the North end when viewed from the E. N. E. forms a small peaked hummock. Notwithstanding these islands appear to be so barren, there are a few men residing on them, to prepare charcoal from the small quantities of brushwood found between the rocks, which they send to Macao for sale. Fresh water may be obtained along the North side of the longest island, at several places. Just to the westward of the North point, in a little cove, there is a Chinese place of worship, and about this part the Compradore's boats await ships after the end of August, when the easterly winds set in. The 2 passages named Yat-moon, and Eee-moon, should not be used unless in a case of emergency, or when the wind blows directly through, as they are narrow with deep water, and have generally a strong current running through them. Yat-moon, is the widest, and of moderate depth. From the North end of the Lemas, Pedra Branco bears N. 71° 58′ E., distant 48 miles, and the island on the West side of the Pratas Shoal bears S. 44° 20′ E., distant 114 miles: from the northern side of the Lema Passage, your course is about West to pass to the northward of Lin-ting Island, when bound toward the Lantoa Passage.

Lema Channel.

LEMA CHANNEL, formed by the Great Lema on the South side, and on the North side by Pootoy Group, as mentioned above, is about 2 leagues wide and very safe, with generally from 17 to 19 fathoms regular soundings, and soft bottom. This channel should, if possible, be always adopted by ships bound to Canton River in the N. E. monsoon, to effect which, they ought to make the Great Lema bearing well to the westward. If the weather be thick, and the wind blow strong at East or S. Eastward, it may be proper to heave to, when land cannot be discerned above 1 or 2 leagues,* and keep in 19 to 20 fathoms, as near as possible, which are the depths close to the East point of the Great Lema, and at the entrance of the channel generally 18 fathoms. If the severity of the weather, do not permit you to enter the channel, shoal not under 25 or 26 fathoms, and in these depths, you will drift clear outside of all the islands.

Directions for entering it;

and how to act in stormy weather.

If, however, a ship should happen to be near the entrance of the Lema Channel in the evening, and from the *falling of the mercury* in the barometer, or by the appearance of the weather, a Ty-foong be apprehended, she should run immediately for shelter into Tytam Harbour, or into the Ta-thong-moon Passage, or else into the channel between Lamma and Hong-kong Islands, as may be most convenient; in either of which, she will be completely secured from a tempest, if she gain anchorage before night in 1 of these havens.

After August, it seems advisable to steer for the Lema Channel, unless you carry a strong S. W. or southerly gale, close up to the islands; in this case, you may steer direct for the Grand Ladrone, and proceed through the Great Western Channel for Macao Road; but with easterly, or variable winds, the Lema Channel is preferable. Here, the risk of being horsed to the westward by the freshes setting out of the western channel, is avoided, and a northerly wind will carry you to Macao Road; which is adverse, if bound in, by the western channel.†

* The Nautilus of Calcutta, about the 15th of September, 1802, made Pedro Branco, and after running well to the westward, hove to in the night, keeping in from 18 to 14 fathoms. A strong easterly gale had prevailed in the night, which increased with thick weather at day-light, when unfortunately they found themselves close to the East side of one of the rocky islands to the northward of the Lema Channel, on which the ship struck, and soon went to pieces. The only officer saved, (with some of the Lascars) by clinging to the rocks when thrown up by the sea, and scrambling farther up when the surges receded, gave me this account at Canton, immediately after the catastrophe.

† In the Anna, we carried a steady S. W. monsoon until within 4 leagues of the Grand Ladrone, on the 11th of September, 1798, had then faint variable breezes; anchored in 5½ fathoms a little above Potoe on the 13th, this day being new moon, a gale commenced at northward, veered to East and S. E., where it blew very severe, brought in a tremendous sea which broke over the ship, and washed 1 of the anchors from the bow. With 3 anchors down, she drove about 3 miles, from off Potoe nearly close to Montanha, and parted 2 of the cables before the gale moderated. The Carron, made the Great Lema, nearly at the same hour we did the Grand

To sail through the Lema Channel toward Canton River, after having entered it, the course is West to the Lantoa Passage, if you pass on the North side of Lin-ting, which is of considerable height, terminating at the summit in a peak of regular conical form, and distant about 4 leagues to the W. N. W. of the western part of Great Lema. It may be passed on either side, as the wind requires, giving a birth to the Sunken Rocks off its N. W. point, and to those above water off the N. E. point already described, and you generally will have soundings from 15 to 12 fathoms; but the channel to the northward of the island, is preferable, which in day-light, has no hidden danger, and you may work nearly from side to side. Directions for sailing through that channel.

Having passed on the North side of Lin-ting, at $1\frac{1}{2}$ or 2 miles distance, steer West for the Lantoa Passage, and conform to the directions given for sailing through it, in the early part of this section.

After passing between Chi-chow and Achow, the water will deepen from 10 to 15, 16, and 17 fathoms in mid-channel, near the islands which front the S. W. point of Lantoa, and there is 7 fathoms close to this point; which, having rounded at a moderate distance, steer to the northward for Lintin, or to the westward for Macao Road, as circumstances require; in the latter case, the depth will gradually decrease to $5\frac{1}{2}$ or 5 fathoms.

SHIPS, which pass through the channel formed between the Lema Islands and the White Rocks to the N. E. of the Asses Ears, may steer to the northward for Lin-ting, and pass on the South side, betwixt it and the Sam-moon Islands, then proceed as if they had entered by the Lema Channel. Or they may pass on the South side of the Sam-moon Islands, and of I-chow the next to the westward, then to the N. W. direct for Laff-Sammee, leaving on the left side the small island Chuck-tu-an, which is surrounded by rocks. Having approached Laff-Sammee, they must keep within $\frac{3}{4}$ or 1 mile of the West side of it, and the South part of Lueng-suitow, to avoid the 4 feet Needle Rock, situated between them and Sam-cock, already described; then, after passing between Lueng-suitow and Chung-chow, they may steer for Lintin, or for Macao Road. To sail through the other channels.

SHIPS which enter the channel formed betwixt the Grand Ladrone and the Gap Rock, or by the narrow passage between the latter and the Asses Ears, may steer to the northward, and proceed as last directed, along the South sides of I-chow and the islands opposite to Lantoa Point. Or if bound into Macao Road, there is a more direct passage about a mile wide, with 15 fathoms water, between Pak-leak-low and Chook-chow, then on the North side of Tong-hou and Leung-neeb, and to the southward of Ty-lo-chow, which track lies nearly in a direct line toward the road. Pak-leak-low is the nearest large island to the Grand Ladrone on the N. E. side, and a little to the eastward of it, there is a small island. Chook-chow, are 2 islands more to the eastward, situated between the former and I-chow; and although the channel is safe in the day time betwixt Chook-chow and Pak-leak-low, a rock to the N. E. of the latter, nearly level with the water's edge, requires attention in passing. The depths in this track are 14 to 12 fathoms, decreasing inside to 8 and 7, then gradually to 5 fathoms in Macao Road. On the North side of the Grand and Little Ladrone, there is a safe passage, with 15 to 10 fathoms between them and the islands to the northward, by giving a birth to the Sunken Rock that lies $\frac{1}{2}$ a mile from the North side of the Little Ladrone, but a ship adopting it, should pass round Potoe on the outside; although there are 6 and $6\frac{1}{2}$ fathoms betwixt it and Woong-boo, the nearest island, it is not advisable for ships to go between them.

Ladrone, and by entering the Lema Channel, the first of the gale coming from northward, enabled her to sail through the channel: and then changing to East and S. E., it carried her up to Lintin, where she rode in smooth water during the hardest part of the gale, whilst we in the Anna, were in danger of being driven on shore. Our Chinese pilot, completely lost his faculties, through fear. Had the ship parted from all the anchors, we could not have veered her head toward the river, on account of the strength of the wind.

# *DIRECTIONS for SAILING into the TYPA, also from MACAO ROAD to BOCCA-TIGRIS; and from thence, into CANTON RIVER, to the SECOND BAR, and to WHAMPOA.*

Caution relative to entering Canton River.

SHIPS about to enter CANTON RIVER, near the equinox in September, or at any other time when a Ty-foong is apprehended, should proceed well up the river above Lintin, where they will be much safer during a storm, than in Macao Road. When passing Macao, an officer may be sent in the outside pilot's boat, or in the compradore's, or some other Chinese boat, to procure the river pilot, whilst the ship is proceeding upward. It is not safe to send the ship's boat ashore, unless she is near Macao in passing, and the wind fair for the boat to run in, because several boats have been driven out to sea and perished: the Ladrones have captured others which were sent to Macao for pilots;* and the officers, or Europeans, who have the misfortune to fall into the hands of these pirates, are generally threatened with death until a heavy sum is paid for their ransom. Captain Funter, who was captured among the islands, in a brig returning from Manilla towards Macao, suffered a very cruel death under the hands of these outlawed barbarians; and also Captain Churchman, his officers and crew, when the ship Ann was boarded by them in 1808.

Directions for anchoring in Macao Road.

IN MACAO ROAD, the water is shoal, generally from 3 and 3¼ fathoms at low tide on the West side, to 4½ or 5 fathoms close over to Sam-cock and the other islands that bound the East side of the road: there is no danger of a ship striking on her anchor, as the bottom, consists of very soft loam or loose mud, the anchors immediately bury in it. Large ships, to preserve a good depth of water, commonly anchor well over to the islands, with Macao Town bearing between W. by N. and W. N. W., distant 6 or 7 miles, which renders the communication with that place difficult and dangerous in blowing weather; nor do the pilots like to go so far off, if any of the Ladrones are in the neighbourhood. With Ko-ho Point bearing about S. by W. ½ W., and Macao Fort or the Town W. N. W., distant 4 or 5 miles, a large ship may anchor in 4½ fathoms at low water, and be more conveniently situated for procuring a pilot. A ship drawing under 18 feet, may anchor with Macao Town on the same bearing, about 1½ mile off the entrance of the Typa; into which she may run, if a gale is approaching. A small ship may anchor in the S. W. monsoon, in the mouth of the Typa, nearest to the South point, where she will have 3 or 3¼ fathoms at low water; and a little within the islet Kaow, which lies on the North side of Ko-ho Point, fresh water may be got at several places. In the N. E. monsoon, she may anchor close over to the northern shore, abreast of a sandy beach, between the Nine Islands and Macao Town, in 3 or 3¼ fathoms at low tide; here, she will generally have smooth water, and an easy communication with the shore.

Directions for sailing into the Typa.

TYPA ENTRANCE, in lat. 22° 8′ N., is formed between 2 high islands: that on the South side called Apomee or Ko-ho, is separated from the N. E. point of Montanha by a narrow gut with 20 feet water in it, decreasing to 9 or 10 feet, farther in toward the Typa. The island on the North side, is called Typa Cabrado, or Cabaretta, and by the Chinese Kai-kong: the rocky East point of this island is called Cabaretta Point; and the East point of the outer island, Ko-ho or Cow-ow Point, bears from Potoe Island N. 19½° W., distant 6¼ miles.

* One of these, belonging to the Marquis of Ely, with the fourth officer and twelve men, fell into the hands of the Ladrones, in 1809, and were ransomed for 7000 Spanish dollars.

Ships coming into, or going out of the Typa, should weigh at half flood, if circumstances admit. In coming in, steer for the North point of Ko-ho, and pass pretty close to it, the deepest water being on this side of the entrance; continue to steer along until the Peak of Sy-lock is on with the North point of Ko-ho. This mark preserved, or the North point of Sy-lock kept just in sight, bearing about E. 13° S. leads in the deepest water; and when the East end of the middle hill of Kai-kong opens to the westward of a rocky mount that forms the S. W. point of the same island, you may haul gradually to the northward, and anchor near the West point of Kai-kong, with the South point of Sy-lock open of the North point of Ko-ho. Here, the depth is from 3¼ to 4 fathoms at low water, where ships are sheltered from all winds, by the high land around; the deepest water is near the West point of Kai-kong, for the bay opposite, formed at the East end of the island Mackkareera, is shoal. The watering cove is at the West part of this bay, and from the North point, a reef of rocks projects near ¼ mile to the eastward; a ship ought not to go so far northward, as to approach this reef. In the middle and eastern parts of the Typa, the water is not so deep in the fair channel leading to the anchorage, for there, the depths are only 14 and 15 feet at low water; but a ship can receive no injury by grounding, the bottom being remarkably soft. It is high water in the Typa at 10 hours on full and change of the moon; the tide rises about 7 feet, and runs at the rate of 1½ and 2 miles an hour, when not influenced by the winds. The ebb runs out of the mouth of the Typa, but it sets across the entrance if you are outside of the points. There is only a few minutes of variation here at present, and it is difficult to say whether it is easterly or westerly.

Geo. site of Macao Town, and

MACAO TOWN (or city) called Ou-moon by the Chinese, is situated in lat. 22° 10½′ N., lon. 113° 32′ E., or 18 miles East of Canton by chronometers, and 12 miles West of Grand Ladrone. There are several forts on the hills around the town, which is irregularly built on a high peninsula that terminates the island of Macao to the southward, being joined to it by a narrow isthmus to the northward of the town.

This healthy and pleasant settlement, the only 1 possessed by Europeans within the limits of the Chinese empire, is completely under the jurisdiction of the viceroy of Canton: although the Portuguese are permitted to retain the *nominal* government of the town, it is dependant on the Chinese for provisions, and every necessary of life. The river pilots are procured here, who each receive a chop from the residing mandarin, to deliver to the officer stationed at the fort in Bocca-tigris, describing the force of the ship, and to what nation she belongs.

the harbour,

MACAO HARBOUR, formed between the peninsula and the large island Twee-lien-shan to the westward, is narrow at the entrance, but has 21 and 20 feet at low water close to Fort St. Jago, which is situated on the East point; and from hence, along the eastern shore to the town, the depths continue nearly the same.

with sailing directions.

A ship proceeding to the harbour, must pass through the Typa, there being 13 feet at low water in the fair track between the Typa and the entrance of the harbour; but only 12 and 11 feet in the large space betwixt Kai-kong and Macao. The channel lies in a direct line from the anchorage in the Typa to the harbour's entrance, and to avoid Pedro-meo, (a sunken rock about ¼ mile to the eastward of the N. E. point of Mackkareera,) the N. E. point of Montanha must be kept open to the eastward of Mackkareera; or in passing it, keep rather more than mid-channel toward Kai-kong. From hence, steer direct for the entrance of the harbour, there being no other danger except Pan-lung-shee, a rock on the East side of the channel, from which the outer point of Great Mal-low-chow bears W. 16° S., and the point of Fort St. Jago N. 41° W., distant about ½ a mile. Great Mal-low-chow, is the outermost of 2 high islets, situated to the S. W. of the harbour's entrance. The N. E. point of Montanha on with the East point of Mackkareera, leads clear to the westward of Pan-lung-shee, and a ship will not be too near it, if she do not get to the eastward of a line drawn from the

West point of Kai-kong to Fort St. Jago point. This point should be rounded pretty close, in entering the harbour, and the eastern shore kept nearly a-board, to the anchorage abreast of the town. By obtaining permission from the governor, a disabled ship may be hove down and repaired in this harbour, and in such case, a pilot will be granted to bring her from the road, or from the Typa, to the harbour; but any navigator by adhering to the preceding directions, or being in possession of Captain P. Heywood's excellent plan of this place, published by Laurie and Whittle in 1809, may run safely into the Typa without a pilot.

Nine Islands. COW-CHOW, or NINE ISLANDS, bearing from Potoe N. $2\frac{1}{2}^{\circ}$ W. distant $12\frac{1}{4}$ miles, and situated near the western shore, about 4 miles to the N. Eastward of Macao, are a group of islets near each other; the outermost bearing N. 57° E. from the Church Senhora de Penhos at Macao, has 4 fathoms at low water close to; and S. W. from this islet about $\frac{3}{4}$ of a mile, there is a rock always visible, not in the way of ships.

From Macao to Lankeet, the western side of the channel generally consists of a mud bank, on which the depths gradually decrease; and they increase quickly in standing from thence to the East side of the channel.

Tides and under tides. In Macao Road, and between it and Lintin, the tides are frequently irregular, setting in a different direction at the surface to what they do underneath, by which ships are rendered ungovernable in light breezes. The ebb is stronger, and continues longer than the flood; the freshes often running out below, when a flood tide at the surface, is setting into the river.

Directions for sailing from Macao Road toward Bocca-Tigris. DEPARTING from Macao Road, with a leading wind, a ship may weigh with the ebb tide, if she can haul well over to the N. Eastward for Lintin; for in such case, the tide will act upon her larboard bow, and keep her off from the western shore; whereas, with an easterly wind, the flood is liable to horse a ship into shoal water, near that shore. With a fair wind, steer N. Eastward for Lintin; if it is night, from $4\frac{1}{2}$ to 5 fathoms are good soundings; for at low water spring tides, greater depths ought not to be expected, until several leagues to the N. Eastward of Macao Road. In turning up with a northerly wind, and flood tide, tack from the West side of the channel in $4\frac{1}{2}$ or 4 fathoms, according to the size of the ship, the lead being a safe guide all along the western shore. The islands to the eastward of the road, may be approached close, having 5 fathoms near them, and when past Chung-chow, which is the northernmost of these islands, the depths increase to 9 and 10 fathoms on the East side of the channel, toward Lantoa. Working from hence to Lintin in the night, stand to $4\frac{1}{2}$ fathoms in the West part of the channel, and do not deepen above 7 or $7\frac{1}{2}$ fathoms to the eastward. Here, the tides become stronger as a ship proceeds upward.

Lintin Island, and the spit to the southward; how it is to be avoided. LINTIN ISLAND, situated on the East side of the channel, is of considerable size, and terminates at the summit in a high conical peak, which is in lat. 22° $24\frac{1}{2}'$ N. and $4\frac{1}{2}$ miles East of the Grand Ladrone, bearing N. E. from the outermost of the Nine Islands, distant nearly 5 leagues. From the South end of Lintin, a narrow spit of sand extends about $4\frac{1}{2}$ miles to the southward, having only 3 fathoms on it, and less water in some places; it is steep to, on the West side, having 10 fathoms near to it, 7 fathoms touching its verge, then 3 fathoms upon it, and the water suddenly deepens on the East side to 8 or 9 fathoms. When Lintin is approached within 5 miles, to avoid this spit a ship ought not to stand so far to the eastward as to bring the peak to bear N. $\frac{1}{4}$ E., and she should tack immediately after deepening to 9 or 10 fathoms; but in the night, she ought not to deepen toward it above 7, or at most 8 fathoms. With Lintin Peak bearing N. $\frac{1}{4}$ E., and Chung-chow S. S. W. there is 7 fathoms on its western edge. Lantoa Peak S. E. by S., is a crossing bearing over its southern extremity, in 5 fathoms water.

The anchorage at Lintin, is in 10 or 12 fathoms, about 1½ mile off the sandy beach on the S. W. side; under 10 fathoms, the water shoals very quick to the shore. Fresh water is procured at the eastern extremity of the beach, and at times, a few bullocks and vegetables may be procured from the inhabitants of the village. It is high water at 12 hours on full and change of the moon; the tide rises 7 or 8 feet, runs nearly North and South, and the ebb in the freshes, sometimes sets at the rate of 5½ or 6 miles per hour. In the N. E. monsoon, the neap tides are very irregular, sometimes only 1 flood perceptible during 24 hours, with a very small rise when the other flood should prevail. Off the West end of the island, there are 14 and 15 fathoms water; round on the North side, there is not more than 2½ or 3 fathoms.

KEE-OW POINT, about 7 miles W. by N. from Lintin, named from a large village a little way to the westward, is the termination of the western shore; the land from thence taking a westerly direction, a large open space is formed between it and Lankeet. There is about ½ way between Lintin and Kee-ow Point, a mud bank with 2¾ and 3 fathoms on it at low water, having to the westward betwixt it and that point, 4 and 4½ fathoms. Kee-ow Point

LINTIN SAND, (called Lintin Bar by the pilots) is a long narrow sand bank, the southern extremity, bearing N. 70° W. from Fan-shee-ak, and N. N. W. ¼ W. from Lintin Peak, distant about 5 miles from the North end of that island. It extends in a N. N. W. direction nearly 8 miles, bounding the East side of the channel, with the deepest water near it on the West side; and to the eastward of it, there is from 4 to 5 fathoms. It is not a ¼ mile in breadth, having 2½ fathoms on the middle and southern parts, and only 2 fathoms at low water toward its northern extremity, with Sampan-chow just open to the westward of Anunghoy Point. About 4½ miles from Lintin, bearing N. 1½° E. from the peak, there are 2 rocky islets, the easternmost of which called Fan-shee-ak, is the largest: when these rocks are in a line bearing S. 70° E., the southern extremity of Lintin Sand is on the same bearing. The East side of the channel, between the extremity of the sand and the North end of Lintin, is bounded by mud banks, with 3 and 3½ fathoms on them at low water. Lintin Sand.

BEING abreast of Lintin with a fair wind, run up in soundings from 5 to 6½ fathoms: with a westerly wind, borrow on the West side of the channel; if it is easterly, keep in 6 to 6½ fathoms with the flood tide. Ships may with safety, proceed 3 or 4 leagues above Lintin, even in the night with a working wind, the lead being a certain guide, by tacking from the West side of the channel in 4½ fathoms, and from the East side in 6½ fathoms; but after being about 2 or 2½ leagues to the northward of Lintin, they ought to tack in 5½ fathoms from the East side of the channel, for the deepest water is near the edge of Lintin Sand, and and if a ship begin to shoal on its verge to 5 fathoms, she will not have room to tack. To sail from Lintin up channel.

Lantoa is frequently obscured by clouds or haze, but when its summit is visible, the ***West Peak*** of that island affords a good mark for running up channel in the day. Proceeding upward, steering N. by W. or N. by W. ½ W., draw gradually the high West Peak of Lantoa, on with the West end of Lintin, and continue to draw it more easterly until it is on with Lintin Peak, or a little open to the eastward of that peak, and keep it so, until you are more than half way from Lintin toward Lankeet. Then, if the wind is contrary, Lantoa West Peak may be brought nearly to the East end of Lintin, in tacking from the East side of the channel; and it may be brought well to the westward of Lintin Peak, when tacking from the West side; but on a nearer approach to Lankeet, the West Peak of Lantoa must not be brought to the westward of Lintin Peak. When within 5 miles of Lankeet, the West Peak of Lantoa must not be brought more westerly than touching the East end of Lintin, when in the West side of the channel; to a considerable way open with the same, when on the eastern side. Here, the depths decrease, and there is only about a fathom more

2½ fathoms bank.

water on the East side, than in the West side of the channel. A *narrow mud bank*, with 2½ fathoms on it at low water, bounds the West side of the channel in this part, and extends in a N. N. W. direction about 4 miles, terminating nearly 1½ mile to the S. W. of Lankeet. There is a channel of 4½ and 5 fathoms to the westward of this mud bank, into which, or upon the bank, the pilots sometimes get ships in the night; but with large ships, they are more inclined to borrow close over to the eastward, whereby, they have frequently grounded the Europe ships upon Lintin Sand.

Several of the pilots know little of the navigation of the river, and when they get into shoal water, cry immediately, *let go anchor*, although the ship may be touching the ground; it is therefore, proper, when the pilot appears confused, or uncertain of his situation, to anchor before the ship get into shoal water.

A SHIP being about 1 or 1½ mile off Lintin, a N. by W. ½ W. course would carry her fair through the channel, close on the East side of Sampan-chow, were the tides to run in that direction; but from Lintin they set N. N. W. and S. S. E. nearly as far as the North end of Lintin Sand, and from thence to Sampan-chow, they set about N. W. by W. and S. E. by E.

Steering up channel, with the West Peak of Lantoa open a little to the eastward of Lintin Peak, or keeping between 4½ and 5½ fathoms if the weather is cloudy, Lankeet Island will be seen making like a saddle, and shortly after, 2 small islets or rocks will appear close to its eastern extremity. These rocks will be nearly on with the middle of the opening of Bocca-tigris when first seen, and should not be brought more easterly; nor in working, ought they to be brought to touch the point of Tiger Island, which forms the West side of the opening, until within 4½ miles of Lankeet; being then to the northward of Lintin Sand, a ship may edge well over to the eastward. There is no *good cross mark* to know when clear of this sand, but when a pagoda on the western shore is brought to bear S. 52° W., a ship will cross to the northward of its extremity. Sampan-chow a little open with Anung-hoy Point, bearing N. 26½° W., leads upon the North end of the sand, from which, the little hill on the East end of Lankeet is distant about 5½ miles.

Lankeet Flat.

LANKEET FLAT, (or bar) extending from the northern extreme of Lintin Sand, across the channel to the shoal mud bank on the West side, and to the N. W. to Lankeet, consists of sand and mud, with hard bottom in some places. The depths on it, are 3 and 3¼ fathoms at low water, and 4½ to 4¾ fathoms at high water spring tides: a ship drawing more than 20 feet, ought not to pass over it until about ½ flood. Close to the northward of this flat, there are generally some fishing stakes, and others between Lintin and Lankeet; care should be taken not to run over the boats fastened to them, which commonly shew lights, when ships approach them in the night.

Lankeet Island.

LANKEET, or LONG-EET, in lat. 22° 41½′ N. bearing N. 27½° W. from Lintin Peak, is formed of 2 hills, sloping into a low point at the West end, where there is a well of fresh water, by a small temple close to some trees; but the island is not inhabited. From its South part, a flat projects 2 miles to the S. S. Eastward, having only 2¾ fathoms water on it, between which and a long narrow sand to the westward, there is a channel leading close past the West point of the island, to the western part of Ty cock-tow. To go up it, keep a large white patch on Ty-cock-tow, in a line with the outermost of the rocks that project off the West end of Lankeet; with this mark on, a vessel will have 4¾ or 5 fathoms at high water, about 4 miles from Lankeet; and will carry the same till nearly abreast of the West end of the island, where she will have 6 or 6½ fathoms close to the rocks. This is a convenient place for a ship to moor, when circumstances require her stores or sick to be landed.

Channel and anchorage to the westward of it.

between the Great and Little Catwicks, if care be taken to give a birth to the reef said to lie nearly in mid-channel betwixt these islands. From hence, steer direct for Pulo Aor.

When near the latitude of Pulo Timoan in thick weather, keep in 32 or 33 fathoms water, which will carry you to the eastward of that island, and directly toward Pulo Aor, which has been already mentioned in the description of those islands: as they are sometimes enveloped in clouds of vapour, or dark haze, care must be taken not to run upon them in the night. Near the Anambas, and to the northward of them, the depths are generally between 40 and 50 fathoms to lat. 5° or 5½° N., decreasing on the West side of the channel, to 35 and 30 fathoms near the meridian of Pulo Timoan.

To proceed from Pulo Aor.

Having passed on the East side of Pulo Aor, at 2, 3, or 4 leagues distance; if bound to Banca Strait, steer S. S. E. ½ E. or S. S. E., according as the prevailing winds and current require, to pass outside of the Dogger Banks. They will be avoided by not coming under 24 fathoms in crossing from lat. 0° 45′ to 0° 30′ N.; and after clearing them, steer about S. S. W. to cross the equator in 20 fathoms: the same course continued, will carry you about 4 or 5 leagues off the East point of Lingin, if there is no oblique current; but, be cautious that a westerly current (which sometimes prevails) do not set you upon the Ilchester Shoals, situated to the southward of that point.

From abreast of the East point of Lingin at 5 leagues distance, the course is about S. S. W. ½ W. to pass between Pulo Taya and the Seven Islands; but if the East point of the former is passed at a great distance, a S. Westerly course may be requisite to effect that purpose. Having passed through between Pulo Taya and the Seven Islands, the course is S. by W. toward Batacarang Point, forming the West side of the entrance of Banca Strait; and this point ought to be approached to 6½ or 7 fathoms, to avoid the Frederic Hendric Rocks. Conform then, to the directions already given, for *Sailing from the northward, through the Straits of Banca and Sunda.*

to the entrance of Banca Strait.

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# *DIRECTIONS for SAILING to CANTON RIVER, also to, and from MANILLA, by the OUTER PASSAGE.*

## SHOALS IN THE S. EASTERN PART OF THE CHINA SEA, AND NEAR THE PALAWAN PASSAGE, AND THE ISLAND PALAWAN.

Directions for sailing from Pulo Aor to Canton River, by the Outer Passage.

WHEN THE S. W. MONSOON, is set fairly in, ships bound to Canton River ought to proceed by the Outer Passage. After having passed near Pulo Aor, on the East side, an N. N. E. ½ E. course would carry a ship direct toward Pulo Sapata, were it not for an easterly current setting frequently out of the gulf of Siam, which generally leads ships several leagues to the eastward of Pulo Sapata, when that course has been pursued from Pulo Aor. To avoid passing near the Charlotte's Bank in lat. 7° 6′ N., it may be proper in a large ship, to steer from Pulo Aor N. N. E. until in that latitude, and from thence N. E. by N. to see Pulo Sapata; but if sights are not obtained for chronometers, the approach to this island will be known by the soundings, already described under the articles *Pulo Condore* and *Great Catwick.*

Having passed to the eastward of Pulo Sapata, at 4 to 6 or 7 leagues distance, the course is N. E. ½ N. to get soundings on the middle of the Macclesfield Bank; and in this track also, a set to the eastward is often experienced in the S. W. monsoon. From having soundings on the eastern part of that bank, the course is N. by W. to the Grand Ladrone, which

a ship ought to endeavour to make bearing about North or N. by E. if the wind be steady, and blowing strong at S. W. or southward. It is improper in any season, to fall in with the land to the westward about St. John's.

Ships which pass Pulo Sapata after the middle of September, should keep well to the eastward after they are in lat. 12° or 13° N. being then to the northward of the shoals; for as they advance to the northward, N. E. or E. N. E. winds may be expected. With these winds they ought to make long stretches to the northward; and short tacks must be made to the eastward at times, when the shifts of wind are favorable, to keep up the easting. In October, a ship ought to endeavour to get near the coast of Luconia, and until she have passed to the northward of Cape Bolina, she should not stretch off for the China coast; and great caution is required, when crossing the latitude of the Pratas Shoal.

To sail toward Manilla

IF BOUND TO MANILLA, steer from Pulo Sapata N. E. but not more easterly until in lat. 12° or 12½° N. on account of the numerous shoals to the eastward of that island; because they extend to about lat. 11° 40′ or 11° 45′ N. the northernmost bearing about E. N. E. or E. N. E. ¼ N. from Pulo Sapata. Having got into lat. 12° 30′ N. a direct course may be steered, to make Goat Island and Luban, situated about 12 or 13 leagues to the S. Westward of the entrance of Manilla Bay; and after passing Goat Island to the northward at 3 or 4 leagues distance, steer direct for the Island Mariveles or Corregidor, which bears from Goat Island N. E. ½ E. distant about 15 leagues. It lies in the entrance of Manilla Bay, rather nearest the North shore, is pretty high, of considerable size, having at the West part fresh water under a steep cliff; but the landing is inconvenient, upon a stony beach. On both sides of the entrance of the bay, the land is high, and on the North side nearly fronting Corregidor, lies Mariveles Bay, about 1 mile wide and 1½ mile deep, with good anchorage, sheltered from all but S. E. and S. S. E. winds: ships of any size may moor here, and procure excellent water. Rocky islets project 1 mile off the S. W. point of the entrance, which are called the Peurcos, or Hogs: ships may anchor in 17 fathoms with the village bearing N. W. by W. or they may run farther into the bay if necessary; the bottom being good holding ground, and the anchorage safe. This is a convenient place for ships to touch at, when in want of wood and water, the former being an expensive article at Manilla.

FORTUNE ISLAND, bearing S. by W. ½ W. about 5 leagues from Corregidor, is small, high, and rocky; leave it about 3 leagues on the starboard side, and soundings of 50 to 40 fathoms will be got when within 2½ or 2 leagues of the latter, decreasing gradually to 27 or 26 fathoms about 2 miles to the westward of it. Pulo Cavallo, a rock like a sail, bears from Corregidor S. E. by S. distant 2 miles, and the islet Fraile, is about the same distance from Pulo Cavallo toward the South shore. Pulo Cavallo is steep to, with soundings of 20 to 17 fathoms between it and the shore, and from 20 to 24 fathoms between it and the island Corregidor, there being no hidden danger. The Nun, or Haycock, another pretty high rock, bears from Corregidor W. ¾ S. about 2½ miles, with 27 fathoms water within ¼ mile of it all round. The soundings from it decrease regularly to 20 fathoms within ¼ mile of the North shore: and deepen to 29 or 30 fathoms near the N. W. part of Corregidor, close to which, there is a perforated rock.

Betwixt Corregidor and the North shore, the depths are 50 and 48 fathoms within ¼ mile of the island, 26 fathoms in mid-channel, decreasing quickly to 16 or 15 fathoms stony ground, within ¼ mile of the North shore.

and into the bay.

When about 2 leagues to the westward of Corregidor, steer for it; with a fair wind, the common passage is between it and the Haycock, afterward on the North side of Corregidor. From hence to Manilla, the course is E. N. E. ¼ N. distance 11 leagues, and to Cavité E. by N. ½ N. 8 or 9 leagues. St. Nicholas Shoal, situated on the eastern side of the passage,

is much in the way, having only 11 feet water on its outer edge, with the N. W. part of Corregidor bearing W. 13° S., and Cavité Church E. 17° N.; within a ship's length of it to the N. W. there are 13 and 15 fathoms water, the soundings being no guide in approaching it, because the bank is so steep. The mark to avoid this shoal, is to keep the Haycock open with the North or N. W. part of Corregidor bearing W. S. W. until the steeple of Cavité Church bear East, and a remarkable hummock W. N. W. ½ N., which stands close to the sea, upon a point of land on the North shore: being then clear of St. Nicholas Shoal, steer for Cavité or Manilla, at discretion.

In the fair channel between the shoal and North shore, the depths are 17 and 18 fathoms, decreasing gradually toward that shore to 5 and 4 fathoms; and in steering eastward, the depths also decrease regularly to 5 fathoms off Cavité, where ships anchor about a large mile off shore in that depth, the bottom all stiff mud.

When the wind is blowing at eastward, out of the bay, the current runs out through the North Channel to the westward; it is therefore, proper, at such times to adopt the channel between Corregidor and the South shore, it having more room to work to windward, and no hidden danger. To enter the bay by this channel, caution is requisite when you come abreast of the easternmost high land on the South shore, which bears S. E. ½ E. from Corregidor; for the tail of St. Nicholas Shoal trends away gradually toward this high land, and the water may shoal suddenly in approaching it, from 12 to 7, or 6 fathoms rocky ground. Therefore, come not under 12 or 13 fathoms, nor under 15 or 16 fathoms when farther to the eastward, and keep the Haycock then open with the North part of the Corregidor; from 15 fathoms water, the next cast may be 7, and then 4 fathoms on the verge of St. Nicholas Shoal, when the Haycock is shut in with the Corregidor.

Within ½ a mile of the East part of Corregidor, there is 22 or 23 fathoms, and when it can be rounded, stand over for, and work along the North shore, which has 15 or 16 fathoms within a ¼ mile of it, and 10 or 12 fathoms about a cable's length off; although in some places, the water shoals suddenly from 15, to 10, 7, and 5 fathoms, there is no invisible danger; and when past the Corregidor, the North shore has good anchorage over a sandy bottom. Farther to the North and eastward, this shore becomes more flat, the soundings decreasing regularly from 10 to 8, 6, 5, 4, and 3 fathoms close in shore.

Tides. The tides in Manilla Bay are irregular; with an easterly wind, the ebb runs out 18 hours together, betwixt Corregidor and the North shore, pretty strong; the flood, about 6 hours to the eastward, sometimes weak, at other times with considerable strength: the perpendicular rise is about 3 feet.

Cavite. CAVITE, in lat. 14° 29′ N. is the port and marine arsenal of Manilla, where the ships are built, and those hove down that want repairs, having excellent conveniences for that purpose. It is well fortified, situated on a low point of land, which forms a good harbour or cove; the deepest water in it, is 6 or 7 fathoms soft mud, with good shelter from West and S. W. winds. As the water in the wells here is brackish, the inhabitants are supplied with fresh water from the river by Old Cavité.

The course from Cavité to Manilla is N. N. E. ¼ E. about 3 leagues, and from the former, the depths increase regularly to 8 or 9 fathoms about mid-way, then gradually decrease to 4½ or 4 fathoms off Manilla. With a turning wind between them, a ship may approach the shore to 5 or 4½ fathoms, the bank fronting it being very flat, composed of soft mud.

Anchorage at Manilla. A good birth to anchor in Manilla Road, is in 5 fathoms water, about a mile off, with the North Bastion N. 37½° E. the S. W. Bastion E. 20° N. the Cupola E. 37° N. and the fishing stakes at the river's mouth N. 18° E. Large ships generally anchor in Cavité Harbour.

Geo. site. MANILLA CITY, capital of Luzon, 1 of the largest of the Philippine Islands, and the

seat of the Spanish government in the East, is situated in lat. 14° 36′ N. lon. 121° 2½′ E. by an observation of Jupiter's satellite, corroborated by chronometers.* It is large, and convenient for trade, the country adjacent producing excellent indigo, sugar, tobacco, hemp for cordage, &c.; but the inhabitants around are indolent, and will not cultivate the ground to rear these articles, unless an agreement is previously made with them, and money paid in advance. Some trade is carried on with China, Batavia, and with several of the Philippine Islands; but the chief dependance of this place, is on the trade to Acapulco, carried on in 2 or 3 ships, which sail in March or April from that place, and arrive at Manilla in August or September, although not always regular.†

During the months of June, July, and August, the air of Manilla is rendered impure, by noxious exhalations arising from the swampy land around; and the weather being sultry, with much rain at times, febrile complaints are then liable to appear.

Firewood is scarce here, and at Cavité, it being brought from the interior. Ships moored in the road, may water expeditiously, by sending their boats into the river as far as the bridge, where the water is very good.

To return from Manilla to Pulo Aor.

DEPARTING from MANILLA, if bound to the straits of Banca or Malacca, the N. E. monsoon is the proper season; and in sailing out of the bay, conform to the directions given for entering it, and to the marks for avoiding St. Nicholas Shoal. Having cleared the bay, steer W. by S. until in lat. 12° N. and 9° W. from Goat Island by chronometer: if the longitude is not ascertained by chronometer or by lunar observations, do not come to the southward of lat. 12° N. until 9° of West meridian distance has been made from Goat Island. From this situation, steer S. W. for Pulo Sapata, observing that a westerly current in this season, is liable to carry a ship a-head of the reckoning: if on the contrary, Pulo Sapata is not seen when in its latitude, steer S. W. by W. or W. S. W. to get into soundings, then S. S. W. ½ W. for Pulo Aor; agreeably to the preceding directions given in the last Section, for sailing by the *Outer Passage* from Macao to Pulo Aor.

Shoals in the S. E. part of the China Sea.

THE ARCHIPELAGO, of sand banks, rocks or reefs, above and under water, situated between the Coast of Palawan and Pulo Sapata, is so extensive, and the dangers that form it so numerous, that there can be little utility in entering into a minute description of them, for they ought to be avoided by all navigators. No ship can enter within the limits of this dangerous archipelago, without getting embarrassed with, or seeing several of the shoals; and there are strong currents, or irregular tides among them, rendering a ship's place very uncertain when observations cannot be obtained; and the rise and fall of the tide is considerable amongst the shoals, during the springs. Although some ships have passed through amongst them with difficulty and risk, others have struck upon, or lost their anchors among the extensive coral flats; and the Fanny, and Betsey were recently wrecked, nearly in the middle of the archipelago. It seems, therefore, only necessary to describe briefly, the *exterior* limits of those dangers.

From the West coast of Palawan, the shoals extend N. W. and westward, to within about

* This is the lon. of Manilla, as determined by Lieut. Ross, in the Company's surveying ship Discovery, and he made it 12° 1′ E. of Pulo Sapata by chronometers. The French circumnavigator La Perouse, made the longitude of Manilla, about 3 miles farther East than Lieut. Ross; but Mon. Gentil made it in lon. 120° 51½′ E. which was long thought to be its true longitude. Don J. Vernacci, made it in lon. 120° 55′ East of Greenwich, so that its true longitude seems not yet determined.

† These Galloons do not sail together, nor exactly at stated periods from Manilla, but generally in July or August; they sometimes go round the North end of Luconia, at other times through the Straits of Manilla, or St. Bernardino, and arrive at Acapulco about Christmas, or generally between the early part of November and middle of January. They sometimes arrive at Manilla in July, and generally make the island Samar about Cape Spirito Santo, then come in by the Strait of St. Bernardino.

3° of the meridian of Pulo Sapata, as the West London Shoal, appears to be the westernmost danger.

Between several of them, there are channels from 6 or 8, to 15 leagues wide; and between the outer shoals off Palawan, and those which lie within 5 or 6 leagues of that island, there is a channel about 8 or 9 leagues wide. In these channels, and close to the outer reefs, there are no soundings.

EASTERNMOST *known* danger is a reef of breakers in lat. 10° 49′ N. lon. 117° 10′ E., distant about 30 leagues from the coast of Palawan, seen in 1803, by the brig Pennsylvania. About 15 leagues farther eastward, in lat. 10° 57′ N. lon. about 117° 53′ E. there is a bank of coral and white sand, extending about a mile East and West, and ½ mile broad, with soundings on it from 8 to 11 fathoms, discovered by the Sea Horse in 1776. Geo. site of their eastern limit,

NORTHERNMOST DANGERS,* are 2 sand banks or low sandy isles, with a tree on the northernmost of them, situated in lat. 11° 29′ N., lon. 114° 20′ E. the other to the S. W. of it, about 2½ or 3 leagues distance: they were seen by the South Sea Castle in 1762, and although she made them only 4° East meridian distance from Pulo Sapata, they are probably upward of 5° from that island, as may be inferred from the examination of this part by Lieutenant Ross. About mid way, nearly in a direct line between these and the easternmost danger mentioned above, lies a low isle in lat. 11° 1′ N. surrounded with breakers, and having a reef projecting to the N. eastward, which has been seen by several ships. Northern limit,

N. WESTERNMOST DANGERS, are 2 isles, with reefs at each extremity, in lat. 11° 27′ N. lon. 114° 22′ E., the whole extending nearly N. E. and S. W. about 7 or 8 miles. N. Western limit.

An island, in lat. 11° 8′ N. lon. 114° 18′ E., about 6 leagues to the southward of the above, having a sand bank 5 miles to the West, and a reef projecting 5 miles to the eastward.

Another island in lat. 10° 44′ N. lon. 114° 26′ E. with a sand bank 5 miles to the N. W. and several detached shoals extending about 3½ leagues to the East and E. N. E of the island.

A reef in lat. 10° 15′ N. lon. 113° 40′ E.; and about 5 leagues S. Eastward of it, Discovery's Reef, some of the rocks above water, extending from lat. 10° 0′ to 10° 8′ N. lon. 113° 50′ E., from which Lieutenant Ross had a narrow escape in the Discovery; and a third reef lies about 4 leagues East from the latter.

WEST LONDON REEF, in lat. 8° 55′ N. lon. 112° 0′ E., with other smaller reefs stretching 3 leagues E. N. Eastward. Western, or S. Western limit.

EAST LONDON REEF, in lat. 8° 48′ E. lon. 112° 24′ E. extends above 2 leagues in an easterly direction. These 2 reefs were seen by the London in 1786, and afterward by several ships; and the West London Reef, *is thought* to be the nearest danger to Pulo Sapata, as Lieutenants Ross and Maughan, in their examination of the above-mentioned dangers, have not been able to discover any others farther to the westward, although many traverses were made for this purpose, between these shoals and Pulo Sapata.

STAGS SHOAL, the North-end, in lat. 8° 24′ N. lon. 112° 57′ E., was seen by the

* The South Sea Castle made them in lat. 11° 40′ N., but these Northernmost Dangers, from the examination of them in 1814, by Lieut. Ross, extend from lat. 11° 28′ 36″ N. lon. 114° 24′ E. to lat. 11° 21½′ N. lon. 114° 16½′ E. The Hainan fishermen, visit the islands and shoals in this part of the China Sea, in March and April to fish, as well as those of the Paracels.

brig Amboina, Capt. Trinder, on the 7th of September, 1802, and named by him from the resemblance of the rocks to the horns of a stag. No soundings were obtained at 80 fathoms within ½ a mile of the north-end of the shoal, which extended S. E. and S. S. W. in form of a triangle, with rocks above water, and breakers on various parts, the intermediate space apparently very shoal, and the southern extremity could not be discerned from the mast head.

The above shoal is situated nearly midway between the easternmost shoal seen by the London, and that seen by the Walpole and other ships, and seems to be another addition to the multitude of shoals which occupy the South-eastern part of the China Sea. The Amboina brig saw another sand-bank and rocks above water, in lat. 7° 51′ N.; lon. 113° 6′ E.

Southern limit. SOUTHERNMOST DANGERS, of this archipelago, are in about lat. 7° 20′ N., extending from lon. 113° to 115° E., and about 16 leagues to the northward. Within these limits, there are several large reefs with high breakers; also extensive shoal coral flats, having only 4 or 5 fathoms, and probably less water, in some parts, with gaps of no ground between them.

INVESTIGATOR'S SHOAL, examined by the Company's surveying ship of this name in 1813, appears to be 1 of the N. Easternmost, and most extensive of the last mentioned Dangers; its western point being in lat. 8° 5′ N. lon. 114° 35′ E. and its eastern extremity in lat. 8° 10′ N. lon. 114° 51′ E. and it is about 4 miles in breadth north and south.

Prince of Wales Bank. PRINCE OF WALES BANK was not known to have less than 10 fathoms water on it, until the fleet under convoy of H. M. S. Grampus, got upon it, on the 20th of October, 1810; and by mean of the observations and chronometers of the fleet, it was found to extend from lat. 8° 3′ N. to 8° 13′ N. lon. 110° 24′ E. to 110° 34′ E. The soundings got in crossing over the bank, were in general from 12 to 30 or 40 fathoms coral, and the Grampus had 9 and 10 fathoms for a considerable time; but the Bombay, got suddenly from 45 fathoms no ground, into 5½ fathoms upon the southern part of the bank, then wore. The coral rocks continued visible along-side, for about ¼ of an hour afterward, with overfalls from 5½ to 12 fathoms, but the water soon deepened to 50 and 60 fathoms no ground, in steering to the N. Westward.

Geo. site.

The reflection from the white coral appeared very conspicuous in several places, and as the Bombay had only 5½ fathoms water on some of the rocky patches, *probably* there may be less on others, consequently this bank may prove dangerous to large ships, if they cross over it when the sea is running high; it ought therefore to be avoided by all the Company's ships, which from being late in the season, may have occasion to cross over from the common track toward the Palawan Passage. Lieut. Ross, got into 15 fathoms water on the South part of this bank, on the 8th of May, 1811, and made the lat. 8° 5′ N. lon. 110° 27′ E. or 1° 25′ East of Pulo Sapata by chronometers.

Other shoals. Between the S. Westernmost of the shoals mentioned above, and the North part of Borneo, there are several other dangerous reefs, or coral shoals, particularly within 15 leagues of that coast. The following are those nearest to the track of ships bound to the straits of Balabac, or by the Palawan Passage, to Manilla, or to China.

Shoals off Borneo. WESTERNMOST, of the SHOALS that lie far off the COAST OF BORNEO, is a reef of rocks and sand, in lat. 5° 35′ N., lon. 112° 28′ E., not well determined: it is about ½ a mile long N. N. W. and S. S. E., very narrow, seen by the Sea Horse in 1776, and by the Luconia in 1803. This ship passed between it and another reef with breakers, said to have 1½ fathom water over the rocks, situated in lat. 5° 24′ N. bearing from the former about S. S. E. distant 4 leagues. To the S. S. W. of these, in lat. 5° 5′ N., there is

a shoal with 2 fathoms water; and S. 37° E. from it, in lat. 4° 57′ N., there is a dry sand, both seen by the Luconia. About 12 leagues to the eastward of these and the former shoals, there are other shoals.

FRIENDSHIP SHOAL, appears to extend N. E. and S. W. 3 or 3½ leagues; the ship of this name, bound to Balambangan in September 1804, got suddenly on the edge of it in 4½ fathoms, in lat. 5° 52′ N., and steered along the West side, sometimes within a cable's length, the water appearing very shoal to the S. Eastward, as far as the eye could reach from the mast head. By noon observation, the North end of the shoal was found to be in lat. 6° 0′ N. and in lon. 112° 49′ E. by observations of ☉ ☾ taken near it. The Surat Castle (Royal Charlotte in company) at 6 A. M. on the 11th of October, 1814, got upon this shoal, and anchored in 4½ fathoms coral rock, in lat. 5° 52′ N. lon. 112° 34′ E. by noon observation and chronometers; but observations of stars taken at 4 A. M. made the latitude more to the southward. It appeared a long narrow bank, with soundings from 30 to 40 fathoms near to its verge, and there probably may be less water on it, than where the Surat Castle got suddenly into 4½ fathoms: a little to the S. W. of it, there is no bottom at 60 fathoms. Geo. site of Friendship shoal.

LOUISA SHOAL, is in extent about 3 miles E. S. E. and W. N. W., of an elliptical form; the rocks on it are generally covered at high tide, excepting 2 small ones on its eastern extreme. It is steep to, with very high breakers in blowing weather; but on a fine day, the Ruby sent her boat to it, where they landed on the coral rocks, and had 8 fathoms water within 30 yards of its western edge; the tide was then rising, and setting over the shoal to the E. N. E., about 1 mile per hour. Louisa shoal.

Many ships have passed close to this shoal, and the mean of a selection of the best observations, places it in lat. 6° 20′ N., lon. 113° 18′ E. by chronometers and lunar sights. Several navigators make it about 2 miles more to the northward, and 6 miles more to the eastward. Geo. site.

ROYAL CHARLOTTE SHOAL, in lat. 6° 56½′ N., lon. 113° 37½′ E., or 4° 35′ East of Pulo Sapata by chronometers, measured by Lieut. Ross, who examined it in his survey of the Palawan Shoals, is about 12½ or 13 leagues to the N. Eastward of the Louisa Shoal, and it is not more than 1½ mile long, of a quadrangular shape, composed of rocks and breakers: this shoal has been seen by several ships, and although the mean of their observations places it about 16 or 17 miles more easterly than the situation above stated by Lieut. Ross, yet this officer's observations are probably near the truth, being made with good chronometers, and instruments, supplied purposely for surveying. Geo. site of the Royal Charlotte Shoal.

SWALLOW'S ROCKS, are about the height of a large ship's hull above water, and appear to be of small extent. They were seen by the Swallow in 1801, and also by the Lady Clive; both ships agree in placing them in lat. 7° 23′ N., lon. 113° 44′ E.,* by good observations, although they were not seen by these ships at the same time; and they lie about 8½ or 9 leagues to the northward of the Royal Charlotte Shoal. Several ships pass between the Swallow's Rocks and the Royal Charlotte Shoal, but the best channel is to the southward of the latter, betwixt it and Louisa Shoal, which should be adopted by all ships bound to Balabac Straits, and by those which intend to proceed along the coast of Palawan. Geo. site of Swallow's Rocks.

HALF MOON, or VIPER'S SHOAL, is the S. Westernmost of those which form the Half Moon Shoal.

* Lieut. Crawford, in the surveying ship, Investigator, saw these rocks in 1813, and made them in lon. 113° 50′ E.

outside of the Palawan Passage, and it appears to be the nearest shoal on the outside of the fair channel, after passing to the eastward of the Investigator's Shoal. It is an extensive reef, stretching N. E. by E. and S. W. by W., with high breakers on it, and small rocks in some places, which seem to be nearly covered at high water. The ship, Cape Packet, on the 27th of October, 1810, was swept along the southern verge of this shoal by the current, within a mile of the rocks, when nearly calm; and it was found to lie in lat. 8° 0′ N., lon. 115° 25′ E., or 1° 19′ West from the Royal Captain's Shoal by chronometer.

Geo. situ.

Royal Captain's Shoal.

ROYAL CAPTAIN'S SHOAL, was seen by the Cape Packet 3 days after passing the above mentioned shoal, which she approached within a mile on the S. E. side, and saw many rocks above water, probably covered or even with the surface of the sea at high tide. This shoal was also seen by Capt. Hamilton, of the Bombay, on the 1st of November, 1810, who describes it as long and narrow, extending N. E. by N. and S. W. by S., with high breakers on a sand bank at the S. W. part, and it was found to be situated in lat. 9° 2′ 24″ N., lon. 116° 42¾′ E. by chronometers; the Cape Packet having made it in lon. 116° 44′ E. When this shoal bore from N. W. ½ N. to W. N. W., seen from the mizen rigging, distant about 5 miles, the island Palawan bore from East to E. S. E. at the same time, apparently not more than 11 leagues off.

Geo. situ.

Lieut. Ross, in the surveying brig, Antelope, examined this shoal in April, 1811, and made its centre in lat. 9° 3′ 52″ N., lon. 116° 41½′ E.

Geo. site of the Bombay's Shoal.

BOMBAY'S SHOAL, was seen by the Cape Packet, and at ½ past 2 P. M. on the 31st of October, 1810, when the body of it bore North, distant 1 mile, she made it in lat. 9° 27′ N., lon. 116° 55′ E., or 1° 30′ East from the Half Moon or Viper's Shoal, by chronometer. On the 2d of November, 1810, the Bombay saw this shoal, which appeared to be a bason of smooth water in the interior part, surrounded by breakers, with several rocks above water, and some dry sand on the northern and southern extremes. Capt. Hamilton made the body of the shoal in lat. 9° 26½′ N., lon. 116° 54′ E. by chronometers; and when visible from the mast-head, bearing N. by W. ½ W., distant about 10 miles, the high round mountain Pampandoyen bore S. E. ½ E., remarkable rugged land S. E. ½ S., body of some high land to the southward S. S. E. ½ E., and the northern extreme of Palawan E. ½ N., distant from the nearest land 10 or 11 leagues.

Other shoals.

At a small distance to the northward of the Bombay's Shoal, there appear to be some additional dangers, seen by the Pennsylvania and other ships, which have deviated from the fair channel track; and all these shoals on the outside of this track are steep to, having no soundings near them.

Geo. limits, of the Island Palawan.

PALAWAN, or PARAGUA, formed mostly of high land, with several remarkable hills, is a narrow island, but of great extent in an N. E. and S. W. direction; the West end being in lat. 8° 24′ N., lon. 117° 14′ E. by the survey of Lieut. Ross, and the North end in lat. about 11° 30′ N., lon. 119° 37′ E. A cluster of low woody islands, stretches from its western extremity to the island Balabac, with intricate channels between some of them; and the northern extreme is encircled by a chain of small isles: both the East and West coasts, are also fronted by small islands or shoals, in many places, which render the navigation dangerous in the night, for some of the shoals are 5 or 6 leagues off shore.

Ooloogan Bay.

OOLOOGAN BAY, on the West coast, is formed by rugged high land on the East side of the entrance, and by several islands to the westward; the entrance is in lat. 10° 12′ N., and the course leading into the bay is South, in 35 fathoms water, decreasing to 22 fathoms off the South point of Harbour Island, situated near the middle of the bay, where a ship might occasionally run for shelter in blowing weather. There is a passage on either side of

Three Peaked Island, which is the small island outside of the entrance of the Bay. There is a high Table Hill in lat. 10° 49′ N., situated on a peninsula, on each side of which a bay is formed; the entrance of the northern 1, called Malampaya Bay, is about 9 or 10 miles to the northward of Table Hill, formed by numerous islands of various sizes, with a round islet directly off it. Although narrow, the depths are 16 to 20 fathoms in the entrance, and also among the islands inside of the bay, where there is good shelter; here is also anchorage in lat. 10° 33′ N., amongst the northernmost of a group of islands; and between Malampaya Bay and the North point of Palawan, there is good anchorage in several places, amongst the numerous islands that line the coast. Ragged Island is in lat. 11° 15′ N., and lon. 119° 21′ E. by chronometer. Geo. site of Ragged Island.

Soundings extend from the coast in some places 7 or 8 leagues, in other parts only 3 or 4 leagues, but the inhabitants of this island being in a savage state, it is not visited by navigators, and seldom seen, except by those who adopt the passage to China by the coast of Palawan, late in the season. The West coast, and the shoals fronting it, have, however, been lately examined by Lieut. Ross, and the situation of the most dangerous shoals correctly ascertained.

SHIPS which proceed by the PALAWAN PASSAGE to China, must be very careful when passing between the shoals; for cloudy weather, with rain at times, are liable to deprive them of observations, particularly in September and October, strong S. W. winds and gloomy weather, may be expected near the West end of Palawan. They should conform to the directions given for sailing to Canton River by this passage, in the second section, under the title, *China Sea*. If they adopt the channel betwixt the Louisa and Royal Charlotte Shoals, (which is the best) lat. 6° 40′ N. is the proper track with a fair wind, which leads in mid-channel; although either shoal may be approached with a steady breeze in the day, observing to keep nearest to that which is on the windward side; and with a steady wind, it may be advisable to get a sight of 1 of them, if not certain of your longitude. Having passed the Royal Charlotte Shoal, an E. by N. course should be steered about 20 leagues, but if the Louisa Shoal has been seen, steer E. N. E. from it about 30 leagues, then more to the N. Eastward to make the island Balabac, and pass it at 9 or 10 leagues distance. Directions for sailing between the shoals, by the Palawan Passage.

The most intricate part of the passage, is abreast of the West part of Palawan, between the Half Moon, Royal Captain's, and Bombay's Shoals in the offing, and those nearer the coast, seen by the Cuddalore. The outer shoals, are distant about 13 or 14 leagues from the West part of Palawan: and the inner shoals, begin in lat. 8° 32′ N., lon. 117° E., abreast of the West end of this island, consisting of numerous shoal patches, or detached reefs of breakers, extending in a N. Easterly direction parallel to the coast, at the distance of from 4 to 6 leagues off shore. PARAQUAS, 1 of these reefs, is of circular form, near 3 leagues in diameter, having gaps through it, and a patch of breakers several miles outside: this outer patch is in lat. 9° 10′ N., and 5 or 6 leagues off shore. In lat. 9° 50′ N. there is another reef of breakers, about 6 or 6½ leagues off shore, seen by the York; and most of these inner shoals have soundings near their outer edges, which will shew their proximity if the lead be kept briskly going in the night; but if soundings are got, haul off immediately, as some of the patches are nearly on the edge of soundings. Between the *inner shoals* and the coast, there is a channel with soundings, but it is seldom used; being rather confined, by other shoals scattered along the coast, the *outer channel* is justly preferred. This is 8 or 9 leagues wide in the narrowest part, and when past the Bombay's Shoal, it is probably at least 12 or 14 leagues wide, betwixt the York's Reef on the inside, and the shoals seen by the Pennsylvania and other ships, in the offing. Paraquas.

The best track to preserve in sailing through the channel, is to keep 9 or 10 leagues off the West part of Palawan, to give a birth to the inner shoals, which consist of numerous dangerous patches in this place, and to keep at this distance until clear of the narrowest part of

the channel; afterward, if 10 or 11 leagues distance is preserved from the coast, it will carry you in the fair channel, clear of the shoals. Attend then, to the directions previously given, and referred to above, for farther guidance in proceeding along the coast of Luconia, toward Canton River. This passage although intricate in unfavorable weather, is certainly preferable to the eastern passage in October and November, and during the whole period of the N. E. monsoon, it seems the best route for ships bound from Malacca to China. The Royal Bishop, and York, got sight of Balabac on the 1st of November, 1786, and reached Macao on the 30th, by this passage. The London got sight of Balabac, on the 28th of October of the same year, stopped 8 days at Sooloo, and did not reach Macao until the 9th of January, 1787, by the eastern passage.*

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## *WEST and NORTH COASTS of LUZON, or LUCONIA, and the ISLANDS CONTIGUOUS; with SAILING DIRECTIONS.*

Luban.

LUBAN, in lat. 13° 44′ N., extending 3½ leagues nearly N. W. and S. E. is the largest island of a group that fronts the S. W. end of Luconia and the N. W. end of Mindora, and is high in the middle, but low at each extremity. The islands to the southward of it, are high, and Amul to the eastward of it, is a high conical mountain. There is a passage between these islands and Mindora and also a safe channel to the eastward of them, which is frequented by the Spanish ships, when going to, or coming from the Straits of Manilla.

Geo. site of Goat Island.

GOAT ISLAND, in lat. 13° 51′ N. lon. 120° 7′ E., or 6° 35′ East of Macao by chronometers, is the outer, or westernmost island of the Luban group, and its S. E. point nearly joins the N. W. end of Luban; it is a low, flat, woody island, said to have a reef with foul ground projecting from its North end. From Point Calavite on Mindora, the West end of Goat Island bears N. 25° W. distant 9½ or 10 leagues; there is a bank about mid-way between this island and the South point of Manilla Bay, with 9 to 15 fathoms water on it.

Geo. site of Point Capones; adjacent coast.

POINT CAPONES, in lat. 14° 52½′ N., lon. 120° 3½′ E., or 6° 19½′ East by Chronometers from Grand Ladrone, and bearing N. 3° W. from Goat Island distant 20 or 21 leagues, is high bare land of reddish aspect, having 2 islands to the N. W. of it about 2 miles distant; the outermost of these, called Great Capone's Isle, is about 1 mile in length East and West, and nearly a league distant from the shore. About a mile outside of it, the depth is 42 or 44 fathoms; from 40 to 35 fathoms are found within a mile of the shore, betwixt this part of the coast and the North point of Subic Bay; and generally from 45 to 50 fathoms, about 3 or 4 miles off. From Marivele's Point to Subic Bay, the coast is in general equally steep, and may be approached within 1 or 2 miles in some parts; but it is prudent to keep 3 or 4 miles from it, because rocks or foul ground extend out about ½ a mile or more from some points of land, there being several indentations or bays, along this part of the coast.

Subic Bay;

SUBIC BAY entrance, is in about lat. 14° 42′ N., having an island in it, to the west-

* The navigation of the Palawan Passage, is farther illustrated, in a preceding section of this work, entitled "Instructions for sailing through the China Sea at all seasons," under the article, Palawan Passage.

ward of which, is the proper passage into the bay, and very safe; but the passage to the eastward, is lined by reefs and very intricate. This bay stretches about 2 leagues inland, and forms 2 excellent harbours, 1 on the East side, and the other at the northern extremity, opposite to the village Subic; here, ships of any description may be sheltered from all winds, in 7 to 10 fathoms mud. About 2 or 3 miles to the southward of Subic Bay entrance, lies the port or bay of Minangas, where small ships may anchor in 5 fathoms, sheltered from all winds excepting those at West and W. S. W.: the course into it is East and E. by N., about mid-channel between the points, to avoid the shoals projecting from them, and there is 4 fathoms fine sandy bottom inside, within a musket-shot of the shore. Minangas Bay;

SILANGIN BAY, in lat. 14° 47′ N., is about ½ a mile wide at the entrance, and 2 miles deep, having shelter from all winds, but rather exposed to the N. W. and W. N. W. The South point is formed by a high, round, bare hill, with a reef projecting from it about a musket-shot to the northward; this must be avoided in steering East into the entrance of the bay, where the depth is 30 fathoms, decreasing gradually to the anchorage a little inside, near the beach on the South shore, which is the best birth. There is a stream of fresh water at the bottom of the bay. About 2½ miles to the S. S. W. of the South point of this bay, there are several rocky islets, called by some the Three Friars, or Capone's Rocks, with a coral reef projecting from them nearly a mile to the N. Westward; and between these rocks and the shore, there is 40 and 42 fathoms water. Silangin Bay; Three Friars.

PLAYA-HONDA, about 5 or 6 leagues to the northward of Point Capones, is formed of a small hill, projecting a little into the sea; and the fort is 2 miles farther to the northward amongst trees, by which it is not easily perceived. The coast between them is of moderate height, with a level space of considerable extent, to the northward of Point Capones; but inland, the country is formed of high double mountains, 1 of which has a small sharp peak upon it. About 2 or 3 miles off, the depths are 35 and 40 fathoms; and the shore is lined by coral reefs, stretching out near a mile in some places; about 1½ mile from the beach, there is a small coral bank bearing S. W. by S. from Playa-honda Fort, having on it 2 fathoms, and close to, 10 or 12 fathoms. Playa-honda and neighbouring coast.

From Manilla Bay entrance to lat. 15° N., the land is generally very high and mountainous: here, it begins to decrease in height; and near the sea, to lat. 16° N. is not much elevated.

TWO SISTERS, in about lat. 15° 50′ N. are low woody islands, with a conspicuous sandy beach, the northern 1 being largest, and distant about 2 miles from the other. ADDERS ISLAND in about lat. 15° 55′ N. and 4 miles to the northward of the North Sister, is small, with trees on it, and a sandy beach. These islands are said to have shoals projecting from them to the N. W., West, and southward, nearly to the distance of a league in some places. It is prudent, to give them a good birth in passing, for they are about 2 or 2½ leagues off shore, which is farther out than the position generally assigned to them.* Two Sisters and Adders Island.

Matsinglo Point, with 2 isles adjoining, lies to the S. Eastward of the Two Sisters, having to the northward, the town and road of that name, which is frequented by the coasting vessels, and said to afford tolerable shelter: the channel leading to it, is on the North side of the northern isle, but narrow and intricate, being bounded by coral shoals, with no ground 60 fathoms a little outside of the entrance.

POINT CAYMAN, about 4 miles to the northward of Adders Island, has a reef pro- Point Cayman, and

* The ship Sir Edward Pellew, bound to China in October, 1806, ran upon the reef contiguous to the Two Sisters in the night, and was got off with difficulty. Passing them about 2 or 2½ leagues off in the Anna, we could not at that distance, perceive any danger.

jecting to the S. S. W. but the channel is safe betwixt the point and that island, with 30 fathoms water in it; and the point may be approached occasionally to 10 fathoms, on the tail of the reef. This channel leads to the road of Tambove, situated to the eastward of Point Cayman, and is open only to southerly winds: steering for the extremity of the beach, to the eastward of the point, the depths will be 12 to 15 fathoms coarse sand and shells, near the termination of the beach; the water will then deepen, but until in soft mud, it will be improper to anchor, for rocks are scattered over the bottom, where it consists of sand. Wood, and good water, may be got at this place.

Tambove Road.

Geo. site of Cape Bolina, adjoining coast.

CAPE BOLINA, in lat. 16° 27½′ N., lon. 120° 0′ E. or 6° 16′ East of Grand Ladrone, (which I made it by chronometers,) bears from Point Capones N. 2° W., distant about 32 leagues. It is low even land covered with trees, and sloping gradually to the extremity, where it has a small rise and terminates in a bluff point, which is not discernible above 6 or 6½ leagues from the deck of a large ship. From lat. 16° N., or from Point Cayman nearly to this Cape, the land is level, of moderate height, and sterile aspect, with a steep beach fronting the sea, and may be seen about 8 leagues. The coast in this space is bold to approach, having no ground at 50 fathoms within a mile of it, in many places; there are soundings near the beach, in some of the small bays, where a vessel might anchor occasionally, but there is no safe place of shelter for large ships. Point Valinasay, at the entrance of the bay of the same name, is about 3 leagues to the southward of Cape Bolina, and 2 miles to the westward, being the westernmost part of the coast; the land between it and the cape, is level, and covered with trees.

Close to Cape Bolina there is a low islet, and the land of the cape is separated from the main by a narrow channel, not visible in the offing. Were it not for the shoals fronting this channel, and stretching nearly a league from the cape all round, shelter would be found inside from all winds; but the approach to it is dangerous, as a vessel may get entangled by the shoals, before the entrance of this intricate port is discerned.

Pangasinan Bay.

PANGASINAN BAY, situated to the eastward of Cape Bolina is very extensive, formed by the low land from that cape taking a S. Easterly direction about 4 leagues; and then the Mongos-Mongos chain of islets and rocks, extending along it about 5 leagues nearly S. E. by S., lines the West side of the bay. As the coast from the cape, and 3 islets, are fronted by shoals projecting out about a league, ships ought to give the North side of the cape a good birth in the N. E. monsoon; for a southerly current may be liable at times, to drift them into Pangasinan Bay or near the shoals on its western side. About 1½ or 2 miles inside of the high Islet Cavalitian, which is the last of the Mongos-Mongos Chain, there is good anchorage in muddy bottom, at the entrance of a small port called Sual, where a ship might be warped into, should circumstances render that necessary.

The Bay of Pangasinan is about 9 or 10 leagues deep, and nearly the same breadth across the entrance, from Cape Bolina to Point Balanac. Pangasinan River, a place of some trade, is situated at the bottom of the bay, into which the small coasting vessels can pass over the bar. The Rivers St. Fabian and St. Thomas, are farther eastward, the former directly in the S. Eastern angle of the bay.

Bigan Road,

BIGAN ROAD, in about lat. 17° 46′ N., is sheltered from northerly winds, but exposed to the South, and westward: the anchorage is near the shore, off the river bearing about East, in 10 or 12 fathoms, from whence the bank shelves down suddenly to no soundings. About a league inland, to the E. N. E. of the road, there is a *chasm* between 2 high hills, called the GAP of BIGAN, which is very conspicuous when viewed from the offing, and is a good mark to know this part of the coast. From Point Balanac to this place, there are several towns along the coast, which is bold to approach, there being no soundings within 2 or 3

and adjacent coast.

miles of the shore: the country is formed of high double mountains, with low woody points to seaward in some places, and the direction of the coast, is mostly North and N. by E.

SOLON-SOLON BAY, about 4 leagues to the northward of Bigan Road, is sheltered from all winds but those that blow between S. W. and W. N. W.; there are good depths in it, and the reefs bounding the entrance, with a rocky bank in the mouth of the bay, will be seen in clear weather. The rocky bank has 1 and 2 fathoms on it, with a passage on each side of 9 or 10 fathoms water; but that to the northward, between it and the North point of the bay, is too contracted. The coast from Bigan Road to this bay, should not be approached under 3 or 4 miles, for the Island Bantay lies about 1½ mile off the projecting part of the land between them, surrounded by breakers and foul ground; and to the northward of it, the coast is lined with coral reefs, stretching out a great way, as far as the entrance of Solon-Solon Bay. Solon-Solon Bay, and neighbouring coast.

SALOMAGUE BAY, adjoining to the northward of Solon-Solon Bay, is separated from it by a point of land encompassed with shoals: and West from this point 1½ and 2 miles distance, there are 2 rocky banks with 4 fathoms, or probably less water on them. This bay is more capacious, sheltered from the same winds, and deeper than the former. Salomague Bay;

The North point, is also like the southern 1, encompassed with a reef, which stretches to the eastward along the northern side of the bay; and an island of moderate height is situated about ¾ of a mile from the point, with a reef projecting off it about a cable's length to the S. Westward. This place may be known from the offing, by a chasm or gap in some high mountains, which overtop the rest of the chain on this coast: it resembles the gap of Bigan, but is not so large, nor does it approach so near to the sea as that gap; which may also be seen bearing about S. E., when a ship is 4 leagues West of Salomague Bay. When the Gap of Salomague bears about E. ¼ S., an East course will carry a ship direct toward the island at the North point of the bay, which should be approached in a large ship bearing about East; and the reef off its S. W. point ought to be passed close, in 25 or 30 fathoms mud, to avoid the rocky banks that lie to the westward of the South point of the bay; she may then steer right in for the middle of the bay, rather inclining toward the northern shore, and anchor in 8 fathoms. Farther in, there is a shoal spot, which will be perceived in clear weather by the discoloured water on it: the best birth to moor, is in 6 or 7 fathoms mud, opposite to some Rice Magazines on the North shore. Directions to enter it.

CAPE BAJADORE, or BOXEADOR, in about lat. 18° 42′ N., lon. 121° 0′ E. by chronometers and lunar observations, is a low point of land, with a reef of breakers projecting out about a mile; and it forms the N. Western extremity of Luconia. From Salomague Bay to this Cape, the direction of the coast varies between North and N. N. E., and in some parts, it is low and woody to seaward. Geo. site of Cape Bajadore, coast from Salomague.

The chain of high mountains up in the country, which commences near St. Fabian in the bay of Pangasinan, extends parallel to the coast, gradually diminishing in height; and stretching more inland about 8 leagues to the southward of Cape Bajadore, leaves a spacious plain fronting the sea. Another chain of hills, begins about 2½ leagues from the shore, which stretches to the northward parallel to it.

About 2 leagues to the northward of Salomague, at a place called Lugue, there is an islet about ½ a mile off shore, surrounded by a reef; and the coast between these places is rocky, with breakers projecting out about a mile.

Ilara Hummock, stands near the sea about 7 leagues to the southward of Cape Bajadore; being of middling height, with patches of trees on it, and there being no other of similar appearance, it is a good mark in sailing along the coast. Soundings are got about a league off shore, from Salomague to Ilara Hummock, but from 1 or 2 leagues beyond the latter, to

Cape Bajadore, none are obtained at the distance of 2 miles from the shore; and the whole of this part of the coast, is destitute of shelter for ships, with rocky patches stretching out above a mile in some places.

Point Cavnaian, and the coast to Port Bangui.

POINT CAVNAIAN, in about lat. 18° 48′ N., has a reef projecting about a mile out, and is the northernmost land of Luconia, distant about 5 leagues N. Eastward from Cape Bajadore; the coast between them forms a considerable bay, with some rocky islets near the shore; and there is anchorage in the bottom of the bay, adjoining to the small port of Bangui. The entrance of this port is between 2 points with reefs projecting from them, and the course into it is S. E.; the depths were formerly 7 and 8 fathoms in it, decreasing gradually to 4 fathoms within a cable's length of the beach inside; but it is said, that this port is now shut up by an earthquake.

Point Caravallos and the adjacent coast.

POINT CARAVALLOS, is a bluff steep point of white cliffs, bearing about E. by S. 4 leagues from Point Cavnaian, having a mass of high mountains contiguous, which go by the same name. Close to the point, there is an islet, and others lie near the shore, about 1½ or 2 miles to the eastward. About 4 leagues eastward from Point Caravallos, there is a round hill of middling height called Pata Point; and the whole of the coast from Cape Bajadore to this place is steep, without any soundings until near the shore.

The land is of middling height, and in some parts rather low close to the sea, with several rivers; but the country inland, is high and mountainous.

Coast of Cagayan.

COAST OF CAGAYAN, from Point Pata to Cape Engano forms a regular concavity, with a chain of mountains inland, and a considerable space of moderately elevated, or low land, fronting the sea; which is interspersed with villages, and intersected by rivers, in several places. There is a continued beach along this coast, with regular soundings in general, 35 or 40 fathoms about 1½ or 2 miles off, on the western part; and the same depths extend 3 or 4 miles off shore, when farther to the eastward. The only danger known, is a sand bank on which the sea breaks in blowing weather, situated about 2 miles N. by E. from the bar of Abula River: the West end of it bearing about South from the middle of the Island Fuga: it extends E. S. E. and W. N. W. about 2 miles, and about a mile outside of it, there is from 35 to 40 fathoms water, fine black sand.

The entrance of the Great River Tajo, about 4½ leagues to the eastward of Abula River, has good anchorage in 10 or 11 fathoms, about 2 miles N. N. E. from its mouth. The point on the S. E. side is known by the church and convent of the town of Aparri, built on it; opposite to which, or North from the church, is the best anchorage, with the Volcano Mountain on Camiguin, bearing N. N. E. Easterly. The river is about ⅓ of a mile wide at the entrance, with 2 and 2½ fathoms on the bar, deepening to 5 and 6 fathoms mud, inside. The coast to the eastward of this river is flat, with sounding of 20 to 25 fathoms black sand, about 2 leagues off shore.

Port Visente;

PORT SAN VIZENTE, about 8 or 9 leagues to the E. N. E. of Aparri, is formed by the small island of the same name, situated betwixt the N. E. end of Luconia and its adjacent island, called Palaubi, or the island of Cape Engano. There is room in this port for 3 or 4 ships, sheltered from all winds; but the entrance is narrow and intricate, being formed between shoals on each side, which project from the S. W. part of Palaubi, and from the island Vizente; a ship therefore, is obliged to warp in.

anchorage along the coast.

There is good anchorage in 5 fathoms, opposite to the mouth of the port, sheltered from all winds, but those that blow between West and S. W. There is also anchorage along the coast, betwixt Aparri Road and this place, in 15 or 20 fathoms within 2 miles of the shore; the soundings pretty regular, excepting a hole in the bank about 3 or 3½ leagues to the

S. Westward of Vizente, with 70 and 80 fathoms water about 2½ miles off shore, having close to the edge of it 30 fathoms black sand.

CAPE ENGANO,* in lat. 18° 39′ N., lon. 122° 21′ E. by chronometers from Grand Ladrone, and by observations taken in 1802, is the N. E. point of the island Palaubi, and moderately elevated; the South point of the same island, is a round hill rather higher, and forms the East point of Port San Vizente. From the point that forms Cape Engano, a coral reef with high breakers, and several rocks above water, projects to the E. N. E. about 3 miles; and patches of shoal water, stretch about a mile beyond it. Geo. site of Cape Engano.

This reef fronts the eastern side of the island, at the same distance; extending southward about 4 miles until abreast of the round hill that forms its South point, and joins to the N. E. end of Luconia.

Close to the northward of Cape Engano, there are 2 islets, the outermost of which, called Lava, or Cape Islet, is a square steep mass of lava, about ½ a mile in extent, and may be seen 8 or 10 leagues.

This is the northernmost land of Cape Engano, and the channel between it and Camiguin is near 7 leagues wide, and clear of danger. As the currents set strong to the northward here, in the southerly monsoon, a ship proceeding from the coast to the eastward, may pass within a mile or less of the North side of Lava Islet, and then steer E. N. E., which will carry her about a mile clear of the North end of the Cape Reef. It is proper, with light winds, to keep on this side of the channel, to prevent being drifted to the northward by the currents, near the Guinapac, or Didica's Rocks.

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## *ISLANDS, CHANNELS, and DANGERS, to the northward of LUCONIA; with SAILING DIRECTIONS from CANTON RIVER to NEW SOUTH WALES.*

BABUYAN, or FIVE ISLANDS, form a kind of circular chain, fronting the coast of Cagayan at a considerable distance; the channels between these islands are safe, without soundings, and their coasts are generally steep to. Babuyan Islands.

LAPURIP, or DALUPIRI, the westernmost of these islands, in lat. 19° 15′ N., lon. 121° 34′ E., is distant about 12 leagues to the N. Eastward of Point Cavnaian; it has a level appearance, extending about N. W. and S. E. 2 or 2½ leagues, and may be seen from 10 to 11 leagues distance. About 1½ mile off the South point, lies the islet Rijutan, with shoals projecting from it a considerable way to the southward; but the water is deep in the narrow channel betwixt the islet and South end of Lapurip. This island is not inhabited, and affords no good anchorage. Geo. site of Lapurip.

FUGA, or NEW BABUYAN, in lat. 19° 1′ N., distant about 4 leagues S. Eastward from Lapurip, is lower, of an even appearance, extending East and West upward of 2 leagues, and nearly half that breadth, terminating in low land at the eastern part. There are irregular soundings along the S. W. side of the island, where a ship may anchor occa- Fuga.

* This name is sometimes applied to the N. Eastern extremity of the main land of Luconia, about 3 leagues farther to the S. Eastward, which is called Point Mauva by the natives.

sionally, and the port of Musa is formed betwixt the West end, and 2 small islands adjacent,
Port of Musa. called Barrete and Mabag. The best channel is from the southward, between Barrete and the West point of Fuga, the depths being 14 and 16 fathoms outside, and from 9 to 12 fathoms in mid-channel.

The West channel betwixt the 2 islands, is narrow, with soundings from 6 to 10 fathoms. The North channel is rendered more intricate, by a reef stretching half way over from the N. E. point of Mabag toward Fuga, and the tail of this reef joining to the N. W. point of Fuga, is a bed of rocks with 5 and 6 fathoms water on it; this passage ought therefore, not to be attempted unless in a case of necessity, and a vessel to enter by it, must borrow pretty close to Fuga. The island Barrete, has a reef to the westward, and another projecting from its South point; water may be procured with difficulty, some distance inland. In 1764, many wild cattle, horses, and plenty of guavoes were found here.

The port of Musa is only fit to run into, in a case of necessity; although sheltered from the sea, the bottom every where being coral rock, mixed in some places with a little coarse sand or gravel, a ship is very liable to have her cable's cut by the rocks; this place is in lat. 19° 2′ N. The depths are from 17 to 12 fathoms in the middle, shoaling to 4 or 5 fathoms near the coral reefs that line the shores on either side, and the breadth of the port is not above $\frac{3}{4}$ of a mile. The best anchorage is nearest to the N. E. side of Barrete, in 14 or 15 fathoms, where the bottom is rotten coral and coarse sand; near Fuga, it is all very rocky.

The tides rise about 5 or 6 feet, but are very irregular in time and direction. The London took shelter here, on the 3d of November, 1764, and repaired in part, the damages she had sustained 4 days previously in a Ty-foong, close to the eastward of Monmouth Island; in which she was obliged to cut away mizen-mast, top-masts, and best bower anchor.

Calayan. CALAYAN, in lat. 19° 28′ N., about 5 or 6 leagues to the N. Eastward of Lapurip, and 8 leagues N. by E. from Fuga, is formed of mountainous and uneven land, highest in the centre, with low gaps in some places. It extends nearly S. E. and N. W. from 2 to 3 leagues, is steep to, without any safe anchorage, and may be seen about 15 leagues: contiguous to its South part, there are some rocks above water, which stretch out more than a mile; and about $1\frac{1}{2}$ mile off the N. E. point, there is an islet about 1 mile in extent North and South, called Panuctan.

Geo. site of Claro Babuyan. CLARO BABUYAN, or OLD BABUYAN, in lat. 19° 37′ N., lon. 122° 17′ E., distant about 10 leagues to the eastward of Calayan, is the most northerly and highest of these islands, in extent about 2 or $2\frac{1}{2}$ leagues. There is a reef projecting from the West end of the island, and the mount on this part is a volcano; betwixt which, and the mountains on the eastern part, there is a concave curve in the form of a crescent when viewed from the northward or southward; but when the island is seen at a great distance from the eastward, it appears as 1 round mountain, with a detached hummock to the northward. The South point is steep and rocky, with a black rocky islet, about a mile off, in form a sugar loaf.

Camiguin. CAMIGUIN, in lat. 19° 4′ N., bearing nearly South from Claro Babuyan, distant about 10 leagues, is a high hilly island, about $2\frac{1}{2}$ or 3 leagues in extent from N. N. E. to S. S. W. The shore is lined with coral rocks in some places, having soundings of 30 to 35 fathoms about a mile off; and the land is low close to the sea, along the eastern and northern sides of the island. The southern part is formed of a high mountain, visible at the distance of 20 leagues, which was formerly a volcano. To the westward of this mountain, there are some steep white cliffs fronting the sea, about 2 miles to the southward of the South point of Port San Pio Quinto.

Port San Pio Quinto. This port is situated a little to the southward of the middle of the island, on the West side,

formed by a concavity in the land about 3 miles wide and 1½ mile in depth, and sheltered from the sea by the island San Pio Quinto, which lies in the middle of the entrance.

This island is high, about 1½ mile in circumference, steep to seaward, having on each side a safe channel leading to the port. The South channel is 1½ mile wide, with 40 fathoms in the entrance, decreasing gradually inside; it is formed between the island San Pio Quinto and the South point of the port, which, with an islet near it, has the colour of iron; and a little to the southward, there is a boiling spring of salt water.

The North channel, formed betwixt the island and North point of the port, is about a mile wide, with soundings fronting it of 28 and 30 fathoms, and 17 or 18 fathoms inside; but there is a patch with only 6 and 8 fathoms rocky bottom, rather nearer the island than mid-channel. A coral reef projects about ¼ mile from the North point of the entrance; the bottom in the channels and in the port, is mostly soft sand, with a little coral in some places, and the soundings decrease gradually to the shore around. The best anchorage is in 15 or 16 fathoms, to the eastward of the island San Pio Quinto, opposite to a rivulet of fresh water, which bears E. N. E. from that island. The tide rises about 6 feet, and flows to six hours on full and change of the moon. This may be considered the only place amongst these islands, which is *tolerably* safe for a large ship; for the cables are not so liable to be injured, as in port Musa, at the island Fuga.

Guinapac Rocks.

GUINAPAC ROCKS, bearing E. by S. from the North point of Camiguin, distant 9 or 10 miles, consist of 2 rocks like towers, 1 larger than the other, with some smaller rocks contiguous to them. There are no soundings within musket-shot of them on the outside; and between them and the nearest part of Camiguin, there is a channel 2 leagues wide, which is clear on the island side.

Didicas Rocks.

DIDICAS ROCKS, bearing N. E. ½ E. from Guinapac Rocks 7 or 8 miles, and distant 4½ or 5 leagues from the North point of Camiguin, are about 2 miles in extent N. E. and S. W.; they consist of 4 sharp pointed rocks much higher than the former, and when seen at a considerable distance, appear like ships under sail. There are amongst them many rocks of various sizes, which render the approach to them dangerous in light winds; for the currents run strong to the northward, producing ripplings like breakers, in the vicinity of, and among these dangerous rocks; and there are no soundings near them, where a ship could anchor in a case of necessity.

Bashee Islands.

BASHEE ISLANDS,* consist of a chain of *mostly* high islands, situated to the northward of the former, and extending to lat. 21° 8′ N.; the channels among them are thought to be safe, free from *hidden* danger.

Geo. site of Balintang Isles, and the contiguous channels.

BALINTANG, or RICHMOND ISLES, in lat. 19° 58′ N., lon. 122° 24′ E. by chronometers, are the southernmost of those called Bashees, and lie nearly mid-way betwixt Claro Babuyan and the nearest Bashee Islands to the northward, called Monmouth Group. They consist of 3 small, but high peaked islets or rocks, discernible about 9 leagues off, and are in 1 bearing E. by S. The westernmost is much larger than the others, and a hole is seen through it when bearing N. E.: they are steep to, may be passed on either side at 2 or 3 miles distance, and the sea beats furiously against them in blowing weather. They bear S. ½ E. from the high mount on the North end of Batan Island, and N. N. E. from Claro Babuyan; the channel between them and the latter, is about 6 leagues wide; and the other to the northward, about 5 or 5½ leagues wide. These channels are wider than any of the other

* Bashee, Balintang, Batan, Sabtang, and Bayat, are native names.

passages among the Bashee Islands, and may be distinguished as the Great Passage, or Balintang Channel.

Geo. site of Batan Island; BATAN, or MONMOUTH ISLAND, extends from lat. 20° 17½′ N. in a N. N. E. direction about 3 leagues, the high mount on its northern extremity being in lat. 20° 23½′ N. lon. 122° 21′ E. by mean of a series of observations by moon and chronometers, taken in different ships. The rest of the island is of considerable height, and near the South end there is a small nob called Pyramid Peak. There are several villages on this island, and anchorage on the East side; here, Dampier anchored in 15 fathoms water, where he remained from the 6th of August to the 25th of September, 1687, and procured a large supply of hogs, goats, and sweet potatoes. There is also anchorage at Ivanna Bay on the West side of the island, upon a bottom of white sand in 5½ to 8 fathoms, within a small ¼ mile of the village bearing E. by E. or E. by S. ½ S.; farther out, the bottom is rocky, with small patches of white sand. The South end of the island has a reef of breakers projecting from it to a considerable distance. There are strong ripplings at times, in the channels among those islands, with irregular tides; but the water does not rise above 4 or 5 feet at full and change of the moon.

Sabtang, SABTANG, (called Monmouth Island by Dampier) is a middling high island, about 3½ or 4 miles in length North and South, separated from the S. W. point of Batan by a narrow Bashee, gut, which is *said* to afford a passage. BASHEE ISLAND, is small and rather low, excepting a hill on the southern extremity, where there is a village: it is separated from the West side of Sabtang, by a channel about 1 or 1½ mile wide; in the southern part of which, there are soundings from 20 to 12 fathoms, and 6 or 7 fathoms close to the shores on each side, the bottom mostly coral rock. The ship St. Jean Baptiste, anchored here in 14 fathoms water, under the East side of Bashee Island, in August, 1769, and procured fresh water at a small rivulet inside of the S. W. point of Sabtang. This is the only safe landing place, the shores of both islands being fortified by a reef; through some of the gaps in it, the boats of the natives can pass in fine weather. There are several pools of fresh water on Goat Island. these islands, and plantations of sugar cane, Indian corn, and fruits of various kinds. GOAT ISLAND, situated about 1½ mile to the W. N. W. of Bashee Island, is also small and rather low, with some cultivated spots on it. The South ends of these 3 islands, lie on a N. W. by W. and S. E. by E. bearing from each other; and with the large island Batan, form the Batan or Monmouth Group.

High Round Island. HIGH ROUND ISLAND, or GRAFTON ISLAND, in lat. 20° 34½′ N., bearing N. by W. ¼ W. from the North part of Batan Island about 4 leagues, is small and steep to; the channel betwixt it and the latter is safe, through which the True Briton passed in the night, on the 14th of June, 1802.

Bayat and other Islands. BAYAT, or ORANGE ISLAND, about 2 leagues to the N. W. of High Round Island, is between 2 or 3 leagues in extent North and South, of an even appearance, without any considerable hills, and may be seen 13 leagues. It is said to be rocky and barren, steep to, without any anchorage. Between Bayat and the northernmost Bashee Islands, there are 2 or 3 small islands, the positions of which are not so well ascertained as the others; but they all lie near the same meridian, forming a chain between the other islands, and there is thought to be no danger near them, that is not visible. The channel betwixt these and the northernmost islands, is 7 miles wide, and perfectly clear, through which the Arniston passed in 1797, and the Valentine in 1764.

Geo. site of the North Bashees. NORTH BASHEES, consist of 1 high island, in lat. 21° 3½′ N., and 2 small, but high

islets to the N.N.E. of the former: the 2 latter, are not visible so far as the other island, which may be discerned 13 leagues off, and they appear with round convex summits in some bearings, but the southernmost generally makes in the form of a peak. Between the 2 North islets, and the other high 1 to the S. S. W. there is a channel about 3¼ miles in breadth, through which the Royal Admiral passed on the 13th of October, 1801. The North Bashee Island is in lat. 21° 9′ N. lon. 122° 8′ E. by mean of many chronometers, and lunar observations.

Ty-foongs, or tempests, are liable to happen in both monsoons, among these islands situated between Luconia and Formosa; and in general, the weather is very unsettled in this part, with frequent strong gales. Shocks, from earthquakes have at times been felt here, and also in ships, near to both the East and West sides of Luconia.

Geo. site of Botel Tobago Xima.

BOTEL TOBAGO XIMA, in lat. 21° 59′ N. lon. 121° 48′ E.,* bears from the North Bashee Island N. N. W. distant 55 miles, by the transit bearing taken when both were in sight, the latter then bearing S. S. E. and the former N. N. W. It is a high island, 3 or 4 miles in extent, appearing in the form of a saddle, or with a gap in it when viewed from S. S. W. or N. N. Eastward, and may be seen 16 or 17 leagues from the mast head. The high part of the island is crowned with trees, and it is well inhabited, having several large villages on the southern part.

Little Botel.

LITTLE BOTEL TOBAGO XIMA, in lat. 21° 56½′ N., is a small island of considerable height, with some bushes on it, about 2 or 2½ miles distant to the S. Eastward of the southern part of the Great Island: a reef projects from its South end about a cable's length or more, which is steep to, there being no soundings near these islands.

Geo. site of Cumbrian's Reef.

CUMBRIAN'S REEF, distant 7 or 8 leagues South of Little Botel Tobago Xima, in the fair channel betwixt that island and the North Bashees, was seen by Captain Gadd, in the Swedish ship Oster-Gothland, on the 12th of January, 1800, who thought it to be Vele Rete Rocks. High breakers were seen on it, extending nearly East and West about a league, and several rocks appeared with their heads above water among the breakers; when in one with the East end of Botel Tobago Xima, the reef bore N. ¼ W., the body of Little Botel then N. ¼ E., and Capt. Gadd made it in lat. 21° 45′ N. This reef was seen in 1808, by Capt. Purefoy, of the Charlotte; and by Captain Tate, of the Cumbrian, on the 26th of July, 1809. This ship was working out between the islands, with a light easterly wind, and by observations carefully taken at noon on 2 succeeding days, when not far from the reef, it was found to be in lat. 21° 35′ N. lon. 121° 50′ E. or 2 miles to the eastward of Botel Tobago Xima: Capt. Tate, thinks this latitude may be depended on, which places the reef 10 miles more to the southward than the position assigned to it by the former navigator. This danger seems also, to have been seen very distinctly by Capt. Johnson, of H. M. S. Cornwallis, as will appear by the following extract from the journal of Lieut. W. Smyth.†

"January 6th, 1808, being under double reefed topsails, going about 8 knots, at 10h. 50 minutes A.M. saw the island Botel Tobago Xima bearing N. N. W. distant 8 or 9 leagues. At 11 h. 50 m. we suddenly observed the water to break a-head, and soon after

* I made it in the above longitude by chronometers and lunar observations. La Perouse made its S. E. point in lat. 21° 57′ N. lon. 121° 52′ E., but Lieutenant Ross, makes the East point, only in lon. 121° 40′ E., and the North Bashee in lon. 122° 2′ E., or about 7½ miles to the West of the situation I have assigned to them.

† Lieut. W. Smyth, who was then in the Cornwallis, is an officer of great ability in scientific pursuits, now employed by the Lords Commissioners of the Admiralty, in making surveys in the Mediterranean Sea, and of the harbour of Syracuse, part of which he has elegantly and accurately performed. He lately received the honor of Knighthood from the King of Sicily.

perceived the rocks; on which we bore up, and passed to leeward of them, keeping them pretty close aboard. At noon the breakers on the rocks bore N. 47° E. distant 1½ mile, our lat. then 21° 41′ N., and we make this reef in lat. 21° 42½′ N, and bearing South from Little Botel Tobago Xima."

It is remarkable, that the latitude assigned to this reef by the Cornwallis, differs 7½ miles from the observations of Capt. Tate, of the Cumbrian, and agrees nearly with the latitude assigned to it by Capt. Gadd. Lieut. Ross, lately searched for it without success in the situation where Capt. Tate has placed it, which creates some doubts about the existence of this danger; but it is hardly possible that all those navigators could have been deceived, in mistaking great ripplings for real danger, although turbulent ripplings are common about these islands, because the apparent danger was always seen in the same bearing, about South from Little Botel Tobago Xima; and not only breakers, but rocks were seen, both by the Oster-Gothland, Cumbrian, and Cornwallis. To avoid it, ships should borrow either toward the North Bashee Islands, or keep near Botel Tobago Xima, as this apparent danger is not much to the northward of the mid-channel track. The variation in this channel in 1808, was 0° 18′ easterly.

Geo. site of Vele Rete Rocks.

VELE RETE ROCKS, or REEF, in lat. 21° 42′ N. lon. 121° 3½′ E. is distant about 14 or 15 leagues to the westward of the Cumbrian's Reef; and bears about S. ½ W. from the low S. E. point of Formosa, distant 4½ leagues. This is a mass of rocks, some of them even with the surface, others above water, which may be seen 9 or 10 miles; the channel betwixt it and the South end of Formosa, is about 4 leagues wide, and very safe.

To sail clear of these dangers.

Ships passing to the southward of these dangers in thick weather, or in the night, should keep well toward the North Bashee Islands, making allowance for a northerly current, which is generally experienced in light winds, and during the S. W. monsoon. From lat. 21° 15′ N. to 21° 20′ N. is a good track to preserve, when passing between the Bashee Islands and Cumbrian's Reef, in thick weather. Several ships during light winds, have been drifted by the current between Formosa and Botel Tobago Xima; the Glatton and Canton were drifted close to a small island in lat. 22° 39′ N. which is surrounded by breakers, projecting out to the N. Eastward a considerable way: this island is 14 leagues to the northward of Botel Tobago Xima, and 8 or 9 leagues distant from the East Coast of Formosa.

Island to the northward of Botel Tobago Xima.

Formosa.

FORMOSA, or PAKAN, called also TY-OAN or TAY-WAN, is about 70 leagues in length, extending nearly N. N. E. and S. S. W.; the land is generally high in the interior, but low in some places to seaward, with soundings near the shore, particularly on the West side. The southern part has on it a high double peaked mountain, discernible at 20 leagues distance in clear weather; from which the land slopes down, terminating in a low projecting point, called the South Cape, or S. E. point of Formosa. This point is situated in lat. 21° 54′ N. lon. 121° 5′ E. by mean of many observations of ☉ ☾ ✶ and chronometers; and bearing about W. ½ S. from the West end of Botel Tobago Xima, distant 13 leagues. To the N. Eastward of the point, there is a village, and a harbour for small vessels; and there is *said* to be soundings near it on the West side. About 13 leagues to the N. Westward of the South Cape, the island Lamay is situated, about 3 or 3½ leagues distant from the coast, with soundings between them. About 13 or 14 leagues farther to the northward, lies the harbour of Ty-oan, (formerly the Dutch settlement of Fort Zealand) with a table hill inland to the E. S. Eastward. This harbour, and the other inlets along the West coast, are mostly fronted by shoals; and from the entrance of the River Ponkan, in lat. 23° 25′ N., sand banks project 3 or 4 leagues into the offing. Ty-oan Harbour will not admit vessels which draw above 7 or 8 feet water, and the other inlets are also shoal. Europeans have no intercourse with this island at present.

Geo. site of the South Point.

The northern extremity of Formosa is in lat. 25° 18′ N. lon. 121° 34′ E., the N. W. point in lat. 25° 11′ N. lon. 121° 6′ E., the N. E. point in lat. 25° 11′ N. lon. 121° 56′ E. by chronometers. There is a group of 3 isles off the N. E. point, with a safe channel about 3½ or 4 leagues wide, betwixt them and the point. Geo. site of Northern parts, isles adjacent.

The islands Hoa-pin-su and Ty-ao-yu-su, are situated to the eastward, the former in lat. 25° 44′ N. lon. 123° 32′ E., the other about 5 or 6 leagues farther to the N. E., and there are several clusters of rocks between them. These 2 isles are steep to approach, and may be considered a part of the Lieu-chew Islands.

PEHOE, or PESCADORE ISLANDS, consist of an extensive group of islands of various sizes, several of them chained together by reefs: there is good anchorage under some of them, in moderate depths from 6 to 12, or 15 fathoms; with very irregular soundings, of 20 to 40 fathoms around the whole. The largest island is in about lat. 23° 32′ N. lon. 119° 46′ E. situated nearly in the middle of the group: on the West side of this island there is a good harbour, formed between it and Fisher's Island, which fronts it on that side, and the channel to enter it is on the South side of the latter. The large island is called Pehoe or Ponghou, and there are several villages on it, with a fort and garrison of Tartar soldiers, it being subject to the Chinese Government. This group of islands extends from lat. 23° 8′ N. in a North direction to lat. 23° 56′ N. and the northern extremity consists of islets, rocks, and coral reefs. Although they are 8 or 9 leagues distant from the West coast of Formosa, the channel is only 4 or 5 leagues wide between them and the sand banks off Ponkan River; and they lie 45 leagues to the eastward of the Lamock Islands, on the coast of China. In this track, the soundings to the S. Westward of the Pehoe Islands are very irregular, overfalls from 30 to 8 fathoms, are found upon some shoal banks in the vicinity of those islands. The Eliza got upon a bank, with 5, 6, and 7 fathoms regular soundings on it; afterward, she saw High Island, the S. Westernmost of the Pehoe group, situated in lat. 23° 14′ N. and found the bank to bear West from that island. There is also uneven ground and overfalls between these islands and Formosa, with an extensive bank of irregular soundings from 24 to 10 fathoms, the S. E. extremity of which is in lat. 22° 52′ N. lon. 119° 23′ E. Pehoe Islands. Geo. site. Soundings irregular near them. Geo. site of an extensive bank.

A CHAIN of ISLANDS of various sizes, extends from Formosa in an easterly and N. Easterly direction to the southern extremity of the Japan Archipelago, and are comprehended under 2 groups or divisions. Islands to the N. Eastward of Formosa.

PAT-CHOW, or EIGHT ISLANDS, (although said to be 17 in number) form the westernmost of these divisions, being nearest to the East coast of Formosa; and they are called Madjicosemah Islands by the inhabitants. The southernmost of them, in lat. 24° 6′ N. lon. 123° 52′ E. by chronometer, is a low flat island, detached about 4 leagues from the others; and the western extremity of the large islands of the Pat-chow Chain, bears from it N. W. by N. 4 or 5 leagues, which is a high bluff point in lat. 24° 17′ N. lon. 123° 45′ E. About 41 miles W. ½ N. from this point, lies the island Kumi, in lat. 24° 25′ N. lon. 123° 5′ E., situated nearly half way between the point and Formosa, and is about 3 or 4 miles in extent: although so much detached from the others, this island may be considered as the westernmost of the Pat-chow, or Madjicosemah Islands. Geo. site of the Pat-chow Islands.

The eastern extremity of the Pat-chow Chain, in lat. 24° 42′ N. lon. 125° 36′ E. is formed by Ty-pin-san, a large island with a smaller 1 off its West end; these are fronted on the North side by an extensive reef, projecting about 5½ leagues from them. The Providence, in 1797, was wrecked on the northern edge of this reef, in lat. 25° 6′ N. lon. 125° 11′ E. Between the eastern and western groups of these islands, there is thought to be a clear passage. These islands are tributary to Great Lieu-chew: after the loss of the Pro-

vidence, Capt. Broughton and his crew were treated with great hospitality by the inhabitants of Ty-pin-san, who supplied their schooner with water and refreshments, to carry them to Macao.

Geo. site of Lieu-chew.

GREAT LIEU-CHEW, or LEOO-KEOO, the largest island of the other division of the chain, is of considerable size, and well inhabited, who have a number of junks employed trading to Japan, and to Amoy on the coast of China. The Lieu-chew Islands, produce rice and other grain, coarse tea, and they work copper mines; there is a good harbour at Great Lieu-chew, and although tributary in some degree to the Chinese Empire, it is said, they would probably receive foreign ships to trade with them. The South end of Great Lieu-chew, is in lat. 26° 3′ N., lon. 128° 18′ E. by chronometer, which, with its neighbouring islands, extends in a N. N. E. and northerly direction, to lat. 27° 34′ N.

and other islands.

The westernmost island of the Lieu-chew division is in lat. 26° 20′ N., lon. 127° 17′ East, and there are other small islands about 30 leagues farther to the N. Westward. A little to the eastward of a line passing from Lieu-chew to the southernmost of the Japan Islands, there are others, 4 of which form a group, in lat. 29° 30′ to 29° 40′ N., lon. 128° 15′ to 128° 20′ E. Meaxima, is a considerable island, nearly S. W. from Nanga-Saque Harbour, and its central lat. is 31° 55′ N.

Japan Islands.

JAPAN ISLANDS, are very extensive, and at their S. Western extremity, on the Island Kinsui, is situated NANGA-SAQUE HARBOUR, in lat. 32° 43′ 40″ N. lon. 129° 52′ 7″ E.,* which is very safe, the anchorage in 5 or 6 fathoms, is sheltered from all winds. From Cape Gotto, in lat. 32° 34′ 50″ N. lon. 128° 44′ E. the entrance of Nanga-saque Harbour bears E. by N. 51 miles, and from the easternmost of the Gotto Islands it is only about the distance of 10 or 11 leagues.

Geo. site of Nanga-saque Harbour.

Cape Nomo, the southern point of Nanga-saque Bay, is in lat. 32° 35′ N. lon. 129° 42½′ E., and there is a *false* entrance in lat. 32° 40′ which may be easily mistaken for the *true* one, and although it really leads to Nanga-saque, might prove dangerous, having never been explored.

The entrance of the harbour, is also difficult to discover, owing to the proximity of the main land to the Island Cavallos, which forms the western shore of the entrance; so that it may easily be missed, if you are not certain of the latitude, and do not keep a good look out.

Captain Fleetwood Pellew, who touched at Nanga-saque in October, 1808, in H. M. S. Phæton, gives the following instructions to strangers, who intend to approach, or to sail into the harbour.

Sailing directions.

Those who are unacquainted with Nanga-saque Harbour, should make the land to the northward in lat. 32° 47′ or 32° 48′ N. as the N. E. trade-wind blows very constantly here, greatest part of the year. Having made the land in this latitude, you may run along shore at 2 or 3 miles distance, as it is steep and bold to approach, and by doing so, it will be almost impossible to miss the harbour. Whereas, being doubtful of the accuracy of the charts, and not perceiving the separation of Cavallos Island from the main, we were nearly missing it in the Phæton, and our mistake was discovered, by seeing Dutch colours hoisted on the island as a signal by the Japanese.

By making the land in lat. 32° 48′ N. you will be about 3 miles to leeward of some islands of rugged aspect, 1 of which is perfectly barren, and formed like a sugar loaf, and the largest

* The above geographical situation of the centre of Nanga-saque City, is by mean of 1028 lunar distances taken in 1804 by Captain Krusenstern, and Dr. Horner the Astronomer, in the first voyage of circumnavigation, performed by Russian officers. Captain Torry in 1803, made this city in lat. 32° 45′ N., lon. 130° 15′ E. Capt. F. Pellew, at the outer anchorage, in H. M. S. Phæton in 1808, near Passenburgh Island with the city bearing N. E. about 4 miles, observed in lat. 32° 43′ 50″ N., lon. 130° 10′ E. by 2 observations of moon and stars, and about 129° 58′ E. by chronometers.

of them forms a high ridge of rugged rocks: from hence to the island at the entrance of Nanga-saque Bay, there is no danger, and the course is S. E. about 9 or 10 miles. If close in with the shore, the southern extremity seen, will be a high bluff point, with some rocky islets off it; this point is about 7 miles to leeward of the entrance, and was mistaken by us for the East side of the entrance, and in steering for it the real entrance was discovered: care should be taken not to fall to leeward, as the fresh N. E. winds would render it difficult to beat back to the harbour.

On the bluff point last mentioned, there is a watch house with a curious roof, and on a small island about 3 miles to the northward of it there is another, but this is situated lower than the first; a third is on the middle of Cavallos, and here the Dutch colours were displayed. Attention to these marks, will prevent any mistake, and a farther guide is, a remarkable high hill at a considerable distance inland, having upon it a remarkable rise or hump, the land of square form, resembling a tower, and this hill is directly over Nanga-saque.

After rounding the point of Cavallos, Passenburgh, and several small islands near it, which form the *Inner Entrance* of the harbour, will be plainly seen, also a reef called the Bone Roaster close to the islands on the western side; these must all be left to starboard, and the main land of Kinsui must be borrowed on, steering direct for the outer islet outside of Passenburgh, which islet is rugged and rocky, with a few straggling trees on it, which you may leave on the larboard hand within $\frac{1}{2}$ a cable's length, and will have no bottom with the hand-lead. There are also some islets on the other side, that cannot easily be mistaken for those off Passenburgh, which must all be left on the larboard hand, and those on the eastern side must be left to starboard, there being no passage within them. When round Passenburgh, the town and harbour open to view, the latter turning suddenly to N. N. W., forms a deep and spacious bay. Passenburgh, is a high round island covered with trees, resembling the English fir; to the eastward nearly opposite to Passenburgh, a small town will be seen in a paled enclosure.

From the outer anchorage, where the Phæton lay, Passenburgh Island bore N. 77° W. distant $\frac{3}{4}$ of a mile, and the city N. 44° E. about 4 miles.

This, and the Port of Firando, about 12 or 16 leagues farther to the northward, were formerly frequented by English ships; but Europeans have not been permitted to trade to these ports, for a considerable period; excepting the Dutch, who have hitherto been indulged with the privilege of trading to Nanga-saque, and allowed to keep a mercantile resident there.* The Russian circumnavigator, Captain Krusenstern, on his voyage of discovery, touched here, and obtained a supply of provision and refreshments. The variation in 1804, was 1° 52½′ Westerly. High water at 7 hours 52 minutes on full and change of the moon, rise of the tide 10 or 11 feet, in April.

Geo. site of South Island.

SOUTH ISLAND, in lat. 31° 30′ N., lon. 140° 0′ E., by chronometer, lies a great way to the E. S. Eastward of Nanga-saque; it is moderately elevated, not of great extent, and is 1 of the southernmost islands of the Japan Archipelago; but some other straggling isles, stretch 4° or 5° more to the East and S. Eastward, in lat. 30° to 31½° N.

To sail from Macao toward the N. W. coast

SHIPS bound from Canton River to the N. W. coast of America, or to New South Wales, generally pass out between the South end of Formosa and Luconia, then to the

* The ship Frederic, of Calcutta, Captain James Torry, having a cargo selected for that purpose, touched at Nanga-saque in September 1803, with a view of opening a trade with the Japan Islands: this was not permitted, and *of course*, the voyage proved unsuccessful, for Captain Torry was equally unfortunate in attempting to trade among the Lieu-chew Islands, although it had been supposed, that the inhabitants of these islands were inclined to trade with foreign ships.

The English officers who lately went from Batavia to Nanga-saque on a voyage of commercial enterprise, when the former place was under the British Government, seem to have been much better treated by the Japanese, than any Europeans had been for a long period before.

of America, or toward New South Wales.

southward of the Pat-chow, and Lieu-chew Islands, and they sometimes get a sight of these, or South Island, particularly when proceeding to the eastward in the N. E. monsoon. In this season, the passage is frequently very tedious, from the prevalence of easterly winds, and blowing weather, in the vicinity of those islands. Ships proceeding to New South Wales, when clear of the islands, are obliged to keep to the northward of lat. 30° N., to avoid the N. E. trade, and make up their easting; and as the trade-wind often hangs between E. by N. and E. by S., so that no easting of consequence can be made in crossing it, they ought to get into about lon. 165° to 170° East, before they stand to the South of lat. 30° N., to enter the limit of the steady trade.

To proceed to the latter place by the Western passage.

It therefore, appears, that much stormy weather will be avoided, and a quicker passage made to New South Wales, by ships which sail from Canton River between September and February, if they proceed through the China sea, and pass to the eastward of the Grand Natuna, and by the Carimata Passage, along the West side of Borneo. From hence they should steer for the East end of Madura, and proceed to the southward through the straits of Bally, Lombock, or Allass, of which the latter will generally be found the most convenient. When clear of these straits, every advantage must be taken with the shifts of wind to get to the southward; and as it generally prevails in this season between S. by W. and S. S. E., from thence to the limit of the steady S. E. trade, they may be obliged to run considerably to the S. Westward, before they get through it, into a high southern latitude. But when this is accomplished, they will be enabled to run down the easting speedily, with westerly and variable winds. In March, or early in April, they may either proceed through Bass Strait, or keep well to the southward, and pass round Cape Van Diemen, at a moderate distance; because easterly winds frequently prevailing in Bass Strait, during these months, are liable to cause some delay to ships proceeding through it to the eastward, but at all other times, Bass Strait ought to be preferred, when circumstances are favorable, being the shortest route.

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# *INSTRUCTIONS for SAILING THROUGH BALABAC STRAITS, to the MOLUCCAS, and to SOOLOO, and the ISLANDS DESCRIBED.*

## SURIGAO PASSAGE, EMBOCADERO, AND EAST COAST OF LUCONIA.

To sail through Balabac Strait, toward the Molucco Islands.

SHIPS sailing from MALACCA STRAIT, in August or September, bound to Amboina, or to the Banda Islands, will probably make the best passage, by proceeding on the North side of the Anambas, and Natuna Islands; then between the Royal Charlotte and Louisa Shoals, or to the southward of the latter, observing to give a birth to the shoals adjacent to the Borneo coast. They must be careful, however, not to fall to leeward of Balambangan, for S. W. winds and northerly currents prevail in August, September, and part of October. Having rounded the North end of that island and Banguey, pretty close, and being clear of Balabac Strait, they should proceed through among the Sooloo Islands, and round the North end of Celebes, then by the Molucco Passage to the southward. If before September, they may keep to the eastward, and pass through Dampier's Strait, or the Gillolo Passage.

If in an indifferent sailing ship, the season become too late to adopt the Palawan Passage, when bound to China, (which can seldom happen,) she may proceed through Balabac Strait, and on the South side of Mindanao, into the Pacific Ocean, or by any other passage which seems advisable.

BALABAC STRAITS, formed between the South end of that island, and the North ends of the islands Banguey and Balambangan, have 3 channels; those near Balabac are intricate, and seldom used, the channel adjoining to Banguey being preferable. There is also a channel to the northward of Balabac Island; and another between the North end of Borneo and the islands Balambangan, Banguey, and Mallawalle; either of which, with proper care, may be used in a case of necessity. Balabac Straits.

In approaching these straits from the westward, KEENEY BALLOO, may be seen if the weather is clear,* which is a very high mountain, inland, on Borneo, situated in lat. 6° 3′ to 6° 7′ N., lon. 116° 40′ E., or 12° 5½′ East from Pulo Aor, and bears S. 6° W. from the North harbour of Balambangan. When bearing to the S. Eastward, it appears in the form of a wedge, with the highest end to the westward, and has been frequently seen at the distance of 40 to 42 leagues. Tanjong Sampanmangio, the North point of Borneo, distant about 18 leagues to the northward of Keeney Balloo, is in about lat. 7° 3′ N., and 4 leagues to the S. W. of the South point of Balambangan. Betwixt that point and Tanjong Inaroontang, another point of Borneo about 7 or 8 leagues to the eastward, the Great Bay of Malloodoo stretches inland a great way to the southward, having regular soundings and moderate depths, with good anchorage in most places; but there is no inducement for a ship to touch here, or at any of the bays on the N. W. or N. E. coasts of Borneo, the natives being inhospitable and perfidious. The Mornington, at anchor in 9 fathoms mud, about 2½ miles from the shore at the head of the bay of Malloodoo, had Keeney Balloo bearing S. 23° W., and the extremes of the bay from N. 5° E. to N. 33° E. There is a shoal with only 2 feet water on it, near the middle of the bay, about 6 miles from the nearest shore, which is not generally known. Geo. site of Keeney Balloo.

BANGUEY, is a considerable island, extending about 6 or 6½ leagues N. E. and S. W., having on the N. W. part near the sea, a conical peak, which is a good mark when near these islands, for it may be seen 14 or 15 leagues, and is situated in lat. 7° 19′ N., lon. 117° 6′ E. by chronometers. There are many islets contiguous to Banguey, on the East, North, and South sides. Ships in want of water, may pass to the southward of Balambangan, and anchor with Banguey Peak N. N. E., about 1½ mile off the mouth of a river bearing East, where fresh water may be got with facility, there being depth sufficient on the bar of the river, for a long boat. This has been already mentioned in describing the Palawan Passage, under the title "China Sea;" but care must be taken to have the boats armed, for the crew of the Betsy schooner, (after that vessel was wrecked on a shoal in the China Sea, in November, 1805,) landed on Banguey in their boat, and escaped from thence with difficulty, the commander and part of the crew having been killed by a party of roving Malays, who at first pretended to be hospitable. Island Banguey, and Geo. site of the Peak.

BALAMBANGAN ISLAND, is nearly 5 leagues in length N. E. and S. W., separated at the N. E. part from Banguey, by a channel about a league in breadth; the southern part of the island is pretty high, but it is rather low to the northward, having 2 harbours on the East side. These harbours are lined by shoals, and several are interspersed over the North harbour, which is the largest; the shoals are generally visible from the mast-head in favorable weather. A settlement formed here by the English above 50 years ago, was surprised and cut off by the Malays soon after; it was resettled in October, 1803, but the establishment being expensive, without any prospect of real advantage, the settlement was soon withdrawn. The South channel leading to these harbours is safe, with soundings mostly from 16 to 23 fathoms off the South end of the island, and betwixt it and Banguey; and the soundings con- Island Balambangan

* It has also been seen from ships to the eastward, when near Cagayan Sooloo. Lieut. Ross, makes this mountain in lon. 116° 40⅔′ E.

tinue regular, when steering from thence to the southward, into Malloodoo Bay, mostly soft bottom.

The North channel is narrow and intricate, bordered by shoals, with the island Mangoak nearly in the middle of it, which is surrounded by a reef, projecting a great way out to the S. E., northward, and N. E; it is called also Tonier, or Tiger Isle, is low and sandy in the centre, and on either side there is a passage. That betwixt it and Banguey, has from 10 to 7 fathoms water in mid-channel; the other contiguous to Balambangan, has from 7 to 5 or 4 fathoms, and either of them may be used occasionally, as the wind or circumstances require, but the eastern passage is considered safest. If obliged to work through, short tacks should be made, and a trusty person kept at the mast-head to look out for green water; this ought not to be neglected, in sailing through any of the channels in the neighbourhood of these islands.

With sailing directions.

In working through the channel betwixt Tiger Isle and Banguey, the Mornington stood within $\frac{1}{4}$ mile of the latter in some places, to 4 or $4\frac{1}{2}$ fathoms water; she had 7 fathoms close to the edge of the reef that surrounds Tiger Island, and generally 5 fathoms in mid-channel. There are some shoal detached spots in the channel, which is narrowest when Tiger Island is on with the North part of Balambangan; then, overfalls may be experienced from 4 to 7 fathoms. After tacking in 5 fathoms on the Banguey side, she had overfalls, and grounded in 2 fathoms coral rock, with the N. W. point of Banguey bearing South, the Peak S. $61\frac{1}{2}°$ E., North point of Balambangan Harbour S. 49° W., off Banguey $\frac{3}{4}$ of a mile.

In passing through the other channel, betwixt Tiger Isle and Balambangan, the shoals will be visible on each side from the mast head, when in mid-channel; and from the deck, when near them, if the weather be clear.

Geo. site.

The North harbour of Balambangan is in lat. 7° 16′ N., lon. 116° 58′ E., or 14° 43′ East from Malacca by good chronometers. The best time to enter it, is near low water, for the shoals are generally conspicuous at that time. Within $\frac{1}{2}$ a mile of the South end of Balambangan, there are 2 small isles.

Balabac Island.

BALABAC ISLAND, bearing North from the opening between Banguey and Balambangan, distant about 10 leagues, is of considerable height, extending North and South nearly 5 leagues. A sharp peaked hill in lat. 7° 59′ N. near the middle of the island, is the highest part; and near the South end, on the East side, there is shelter in a bay called Dalawan, which has reefs projecting from the points that form the entrance.

To sail through a channel to the northward of it.

If a ship bound through Balabac Strait, fall accidentally to leeward in the S. W. monsoon, and find difficulty in beating to the South, toward the entrance of the *proper* strait, she may proceed through the passage to the northward of Balabac. Giving this island a birth of 4 or 5 miles, and having a distinct view of its North end, a small island will be seen, with a dangerous reef extending from its North end, in a N. W. direction between it and Balabac. Keep the latter about $\frac{1}{2}$ a mile distant, with an officer, or trusty person at the mast-head, and steer eastward for 2 isles nearly of equal size: off the North end of the southernmost, there is danger, but every fathom of decrease in depth, may be discerned from the mast-head, if the weather is clear. Pass in mid-channel, which at first entering between these isles, lies E. S. E. or S. E. by E.: when clear of them, a group of islets will be perceived; do not approach these islets, for an E. S. E. $\frac{1}{2}$ S. course with a leading wind, is as far to the southward as can be steered with propriety, until a ship has run 5 leagues to the eastward after clearing the passage.* She may then haul to the southward at discretion, with the lead

* The ships Aurora and Commerce, (part of a fleet with troops and stores, proceeding to form a settlement at Balambangan) fell to leeward, and went through this passage to the northward of Balabac, on the 23d of September, 1803. The Anstruther, one of the transports, (a very fine ship,) was wrecked upon 1 of the shoals to the N. Eastward of Salingsingan Island, and many of the troops perished. The Thornhill, another of these ships, was wrecked on the reef that extends to the westward of the Mangsee Islands.

kept going, and a good look out; taking care not to get to the eastward near St. Michael's Shoals, which are in about lat. 7° 43′ N., steep to, and very dangerous.

The channel nearest to Balabac, on the South side, is by keeping near the reef that stretches along its South and S. W. sides, until the southern extremity of the island bears about W. by S., then the course is East, between 2 isles surrounded by reefs, in a channel about 3 or 4 miles wide: but this channel is seldom used by any ship.

MIDDLE CHANNEL, is formed on the North side by the 2 small isles Loomboocan and Candalamar, which lie to the S. Eastward of Balabac, and the former or southernmost, is sometimes called the Rabbit, and the other the Coney. This channel is bounded on the South side by the small isle Salingsingan, and shoals or reefs to the northward of it: there is a large reef several miles to the southward of Loomboocan, betwixt which, and that isle, is said to be the best passage; for there is another *intricate* passage to the southward of the reef, between it and other dangers near to Salingsingan. Middle Channel of Balabac Straits.

This middle channel, is now seldom used; although the soundings are generally from 17 to 23 fathoms, sandy bottom, ships are liable at times, to experience sudden overfalls, of 5 and 4½ fathoms, upon coral patches near the edges of the dangers that surround the channel.

SOUTH CHANNEL, of Balabac Straits, is *now* justly preferred to any of the others, having good anchoring ground from 18 to 25 fathoms, about 4 or 5 miles off the North ends of Balambangan and Banguey. It is bounded on the South side by a shoal and 5 islets adjoining to the north-east end of Banguey, the outermost of which is called Passage Island, or Goohooan. On the North side, it is bounded by the 2 small Mangsee Islands, which are in lat. 7° 32′ N., distant 8 or 9 miles N. by E. from the N. E. point of Banguey; having a reef extending a little to the southward, and round to W. by N. and W. S. W. from the southernmost island, to the distance of nearly 3 leagues. The Salingsingan islet, or northernmost of the Mangsee isles, is 3 or 4 miles to the northward of the other 2 mentioned above: these 3 isles are in a line bearing N. N. W., and seem to be connected by reefs. South Channel,

If coming from the West toward this channel or strait, be careful not to fall to leeward in the S. W. monsoon; soundings of 50 to 60 fathoms will be got about 11 or 12 leagues to the westward of Balambangan. The North end of this island, and of Banguey, (which bear about East and West of each other) should be approached within 5 miles, for there seems to be no shoal water beyond 2 or 3 miles of the North end of Balambangan. Steering E. by N. along Banguey, at the distance of 5 or 6 miles, the Mangsee Isles will soon appear bearing about E. N. E.; keep rather nearer to Banguey, than to the reef that extends from these islands to the westward about 3 leagues, which is very conspicuous by its light green colour, contrasting the dark blue deep water around. The soundings through, are irregular from 7 to 14 and 17 fathoms, over a corally bottom; and if the Banguey shore is approached within 3 or 4 miles, the water may probably shoal to 6 fathoms or less. Directions to sail through it,

When the Mangsee Isles bear N. N. E., and steering East, a small sand bank encircled by a reef, will soon be seen bearing about E. S. E., which lies 2 or 3 miles from Passage Island; it ought to be passed on the North side at more than 2 miles distance, in not less than 8 fathoms water.

COMING from the eastward, the Mangsee Isles should not be brought to the northward of N. N. W. until within 3 miles of them, then you may edge away gradually, giving them a birth of 2 or 3 miles: when they are brought to bear North, steer S. W. by W., which will keep you in a good channel between the reef on the northern side and the Banguey shore, if not affected by oblique tides or currents. Proceeding along the Banguey shore at 5 or 6 miles distance, when Banguey Point bears South, steer out to the westward, being clear of the dangers in the channel.

and from thence eastward.

Having cleared this strait, if bound to China or Manilla, late in October or November, or at any other time, steer eastward for the West coast of Mindanao, for the track near the East side of Palawan, is little known, and thought to be interspersed with shoals. Therefore, pass to the southward of the 3 small islands called St. Michael's, or Manook-manookan, Bangcawang, and Bancooraan, which extend from about lat. 7° 42′ N., to 7° 50′ N., lon. 118° 40′ E., and bear nearly North from Cagayan Sooloo. The extensive shoals which stretch 5 or 6 leagues to the westward of these islands, called St. Michael's Shoals, have many rocks appearing above water, and ought to be avoided; also the Toob Bataha, in about lat. 8° N., which is a bank partly dry with a contiguous rock, situated about 15 or 16 leagues to the eastward of these 3 islands. Having reached the West coast of Mindanao, keep near to it, and to the same sides of Negroes Island, Panay, Mindora, and Luconia, particularly if N. E. winds be expected to prevail.

Geo. site of St. Michael's Islands, and shoals.

Toob Bataha.

To sail toward Cagayan Sooloo.

Ships bound to Sooloo, after clearing Balabac Strait, steer to pass near Cagayan Sooloo, on the South side; but the course ought not to be more southerly than E. by S. ½ S., till 7 or 8 leagues clear of the strait, because several ships have got upon shoal coral patches of 5 or 6 fathoms, when steering about E. S. E.; and nearer to the Borneo shore, there are some reefs of rocks above water. With Banguey Peak bearing W. ½ N., distant about 8 or 9 leagues, the Fly, in 1796, shoaled suddenly to 4 fathoms coral, and deepened fast to 22 fathoms steering to the northward. Shortly after, she had 5½ fathoms on another patch of coral; so that a good look out, is indispensable in this track.

Geo. site, circumjacent isles.

CAGAYAN SOOLOO, in lat. 7° 0′ N., lon. 118° 36′ E. or 1° 30′ E. from Banguey Peak by chronometer, is an island of considerable size, and may be discerned at the distance of 7 or 8 leagues. There are several islets to the northward, and 2 to the southward near it, called Mooleegee Isles, 1 of which has the form of a saddle, and it is in lat. 6° 54′ N.; a ship may occasionally anchor near them, as they are safe to approach. About 9 or 10 leagues to the southward of Cagayan Sooloo, the small island Mambahenawan is situated; and to the West, and S. Westward, there are soundings of 20 to 30 fathoms, contiguous to the small islands which are scattered along the coast of Borneo. There are several deep bays on the N. E. side of Borneo, with good anchorage in some of them. SANDAKAN bay is 1 of these, and contains 3 excellent harbours inside: Bahalatolis Island, in lat. 5° 54′ N. forms the entrance, and has plenty of good spring water on it; these harbours will contain any number of ships, well sheltered, in from 7 or 8, to 4 fathoms. The islands about the harbours, abound with good water, and the surrounding country with teak, poon, and camphor trees, fit for ship building; there are also rattans and bamboos; the tide rises 8 or 9 feet. The Sooloo people have a settlement here.

Sandakan Harbour on Borneo.

Geo. site of Pangootaran with sailing directions to Sooloo.

PANGOOTARAN, in lat. 6° 15′ N., lon. 120° 40′ E., bearing E. by S. ¾ S. from Cagayan Sooloo, distant about 44 leagues, is the N. Westernmost Island of the Sooloo Archipelago; it being low and level, little more than the trees are visible above water. Having proceeded from Cagayan Sooloo, and approached to the South end of Pangootaran, there is a good passage between it and Oobean, the next island to the southward, although without soundings; nor is any found in the direct track from Cagayan Sooloo. Keep nearest to Pangootaran in passing through, and from hence, the Island Sooloo may be seen, the road of which is at the N. W. end of the island, and bears E. S. E. about 11 leagues from the South end of Pangootaran; but a S. E. by E. course should be steered past the small Island Oosadda, situated to the eastward of Oobean, and continued until within 4 or 5 miles of the land to the westward of Sooloo town. This course is requisite, to avoid the race of Takoot Kababawan, situated near the West point of the Island Palleeangan, on the North side of the channel; which is said to have only 4 fathoms water on it, and there are no soundings a little to the southward. At noon when the observed lat. was 6° 15′ N. a long reef of black

rocks bore S. E. ½ S., centre of Oobean S. by E. ½ E., Oosadda S. W. nearly in mid-channel; this reef seems very dangerous, extending about N. E. and S. W., and the rocks just appearing above water, with breakers on them at times.

If you leave Cagayan Sooloo in the evening, with a fresh breeze, steer more northerly than the direct course, to avoid the above-mentioned reef, as you are liable to have a southerly current, and do not run for Pangootaran with its South extreme East of you.

Geo. site of Sooloo.

SOOLOO TOWN, or SOONG, in lat. 6° 1′ N., lon. 121° 12′ E., is the residence of the Rajah of this island, to whom all the islands of this Archipelago are subject; likewise the large Island Basseelan, from which an annual tribute is collected in pepper, and other articles. The Island Sooloo is of considerable height, extending East and West about 10 leagues. The anchorage in the road, is in 18 or 20 fathoms, on a loose sandy bottom, with the Sultan's house bearing S. 26° E., Mount Temontangis S. 26° W., Tulean Rock S. 67° W., the S. W. point of Palleeangan N. 60° W., distance off the town 1½ mile. The bottom being indifferent holding ground, ships are liable to drive with N. W. squalls. Bullocks are plentiful here, at a moderate price, and very fine. Poultry and live stock of all kinds, with abundance of vegetables, and fruits, may be procured; also wood and water. But the inhabitants are a treacherous race, and must be carefully watched; it is not advisable to touch here in a small ship, to procure supplies or to trade, unless well armed, and prepared to resist any attack that *may be* made by the natives. The fleet from China, in June, 1795, anchored in Toolyan Bay, near the East end of Sooloo, and watered there; then proceeded out by the Tapeantana Channel.

Takoot Paboonoowan Shoal.

If a large ship approach Sooloo Road from N. Eastward, care must be taken to avoid Takoot Paboonoowan Shoal, on which the Swedish ship Gustavas Adolphus struck in 1798, where she had only from 3 to 3½ fathoms, and injured her rudder; it is in lat. 6° 15′ N., distant about 6 leagues nearly N. by W. from the East end of Sooloo, and 5 leagues to the westward of the Duo Bolod, which are 2 high rocks nearly mid-way betwixt Sooloo and Basseelan.

To sail from Sooloo to the S. Eastward.

Departing from Sooloo Road, the best track when bound to S. Eastward, is round the West end of the island, then leaving the high Island Tapool, and the low Islands Talook and Kabingaan to the southward, and Pata with its contiguous isles to the northward. There are soundings mostly through this track, and anchorage between the island, where a ship may stop tide occasionally; and it is safe working through in the night, if the weather be clear. There seem to be, however, some coral patches hereabout, for the Albion tacked on a rocky spot in 8½ fathoms, the rocks visible under the ship, with the South point of Pata bearing East, the S. E. end of the low Island Talook, which lies to the N. W. of Kabingaan S. E. by S., and the westernmost high land of Sooloo N. N. W.

Tides and currents.

The tides set fair through the channel, about E. S. E. and opposite, sometimes very strong; off the West end of Sooloo, they have been found to set N. W. and S. E. in December, about 4 miles per hour. During the N. E. monsoon, there is generally a N. W. or westerly current in the neaps, betwixt Sooloo and Basseelan, and in the track from thence to Balabac Strait. In March and April, the current sets mostly to the eastward among the Sooloo Islands; but it sets to the westward at the same time, in the openings of the Philippine Islands, to the northward of Mindanao.

Betwixt several of the islands to the eastward of Sooloo, there are safe channels, with moderate depths for anchorage; but if any of them are adopted, caution is requisite, for they are little frequented, and reefs project from some of the islands.

Tawee-tawee Islands.

TAWEE-TAWEE ISLANDS, forming the S. Western part of the Sooloo Archipelago, extend nearly to the Peninsula of Unsang, the extremity of which forms the N. E. point of Borneo. They consist of an immense chain of islands, very imperfectly known, with several

dangers among them; particularly on the Pearl Bank, Tahow, which lies in about lat. 6° 44′ N., distant 8 or 9 leagues to the N. N. W. of Tawee-tawee, and 19 leagues to the westward of Sooloo.

Another chain of islands, stretch from the Tawee-tawee Islands and from Unsang, a great way out from the coast of Borneo; and the southernmost of them, called Leegetan Islands, in about lat. 4° 20′ N. and 10 leagues off the coast, have several reefs and sand banks around, without any soundings near them.

If a ship sail near these islands, or along the coast of Borneo, great care must be taken to keep a boat a-head sounding in the night. The Laurel from China, bound to Batavia, proceeded by this track in July, 1787, and saw a rock about the size of a boat with breakers on its West end, which is about 2 or 3 leagues to the northward of the small isles Baguan and Taganac, distant 8 leagues from the coast of Borneo. She endeavoured to work close round Unsang, but the winds being light, with a northerly current, obliged her to run along the North side of Tawee-tawee; she then passed between the 2 islands off its East end, called Sigboye and Tambagaan, in a channel 1½ mile wide, with soundings 15 to 23 fathoms coral rock. When through, she steered E. S. E. to give a birth to a sand bank extending to the northward from a Haycock Island, and passed out into the open sea between 2 other islands, least water 9½ fathoms in the channel. Breakers were seen to project about 2 miles from the East end of the southernmost island, which lie to the westward of the channel.

Surigao Passage.

SURIGAO PASSAGE, or STRAIT OF PANOAN, formed between Mindanao to the southward, and the other Philippine Islands to the northward, is now seldom or never chosen in any ship, when bound by the eastern passage to China; for it is rendered intricate, by rapid tides, *at times*, among the numerous islands at the eastern part, and there are no soundings. Besides, it is in too great a latitude to be adopted late in the season, for the islands outside become a lee shore, when the N. E. monsoon sets in.*

To sail through it.

Should a ship proceeding to China, have westerly winds when near the western part of this passage, and be carried into it by the current or otherwise, she may proceed through, if October is not far advanced.

The coast of Mindanao is steep and bold, which should be kept pretty close aboard, and a birth given to the 2 small isles Murcielagos, that lie near Point Galera; the course continues along the coast to the E. N. Eastward, between Mindanao and the islands to the northward. Of these, the nearest are Aliguay and Silino, 2 low woody islands, steep to, on the South sides; and the large islands to the northward will be seen, if the weather is clear. From Point Tagola, which lies to the southward of the island Silino, the coast trends to the southward of East, and forms several bays, but the course is about E. by N. 25 or 26 leagues to Camiguin: this is a high island with a nob on its centre, that may be seen 20 leagues; and being situated near Sipaca Point on Mindanao, the channel is on the outside of the island. Having passed Camiguin, steer to the N. E. for the channel between the North point of Mindanao and Panoan, which is 6 or 8 miles wide, then haul round the S. E. point of Panoan, and proceed to the northward along the East side of the large island Leyte, until a bluff point on it is brought to bear S. W. by W. ½ W. With this bearing of the point, steer on the opposite course or bearing, which will carry you through the channel into the ocean, between Linago or Passage Island to the southward; and Omonkon, Soloan, and 2 other small islands to the northward; which channel is wide, and seems clear of danger.

When passing through the channel between the North point of Mindanao and Panoan, 2

* The Royal Captain, bound to China, went through this passage, and got clear of the islands on the 8th of October, 1762, and the London went through it in October, 1764: the former ship experienced rapid tides, at the eastern part of the strait, but the London did not, nor did she meet with any considerable difficulty or danger.

small woody isles will be seen, 1 of them ahead, and the other to the southward of it. Betwixt the latter and Mindanao there are soundings of 25 to 30 fathoms, and 15 to 10 fathoms very near the Mindanao shore. The Spanish village SURIGAO, consisting of few houses, is situated about 2 leagues to the southward of the small isle; and by hauling to the southward close along the coast of Mindanao, you may anchor in 14 or 15 fathoms fine grey sand, with the village bearing S. by W. distant 1½ or 1 mile. If it is brought to bear S. W. or more westerly, at the distance of 3 or 4 miles, neither anchors nor cables will hold against the tides, which run sometimes at the rate of 9 or 10 miles per hour, as experienced by the Royal Captain, at anchor here, in 1762. Surigao Village, anchorage, and tides.

The Surigao Islands, which front this bay, form a compact chain, stretching from the N. E. part of Mindanao, in a northerly direction nearly to Passage Island, at the East entrance of the strait of Panoan. There is no safe passage between them, for the tide runs at the rate of 9 or 10 knots, with dangerous ripplings, in the 2 narrow guts formed between the southernmost of these islands and the South point of the bay.

Ships intending to stop at Surigao Road for water, should with the wind at southward or westward, carry all sail possible, taking care to haul close round Surigao Point, between the South Woody Island and Mindanao, keeping this coast aboard until the village bear S. by W., distant 1½ mile. In this situation, they ought to anchor in 15 fathoms, and not bring the village farther to the westward; here is a fresh water river, and by observations taken in H. M. S. Psyche in 1809, Surigao village is situated in lat. 9° 47′ N., lon. 125° 25′ E. When going in, the Small Woody Island may be passed at ¼ mile distance, but not nearer. Sailing directions. Geo. site.

The propriety of keeping near the Mindanao shore, in proceeding to the anchorage at Surigao, will appear evident by the following remark, taken from a plan of that bay, constructed by Mr. C. Maitland, Master of the Psyche.

Having no good directions, this ship did not keep Surigao Point and the Mindanao shore aboard, but passed to the eastward of South Woody Island, and finding the ebb tide running rapidly to the S. Eastward, she was obliged to anchor in 40 fathoms. The cable immediately parted, and a second anchor was let go, which not bringing the ship up, she was obliged to cut; but in working against the strong ebb tide, she was horsed close over to the islands bounding the East side of the bay, forced again to anchor in 27 fathoms, where she lay 2 days blowing a gale at westward, with the rocks under her stern.

When the weather became moderate, she passed to the North, and N. Westward, along the West side of the chain of islands, through an intricate channel formed between the chain and N. E. island, which is a large island on the N. E. side of the bay. Here, she narrowly escaped being lost upon a reef which projects from the West point of the island that lies directly East from N. E. Island, and bounds the East side of *Psyche's Channel.*

There is a shoal with only 2 fathoms water on it, situated betwixt N. E. Island and South Woody Island, nearest to the former; but no ship ought to go outside of South Woody Island, for if she is obliged to anchor in deep water, no cables or anchors will hold against the tides.

The easternmost of the Surigao Islands, fronting the ocean directly East from the Bay, has a reef projecting from its N. E. part, on which a Spanish ship was lost in 1808.

EMBOCADERO, or STRAITS OF ST. BERNARDINO, called also the STRAITS OF MANILLA, are formed between the South coast of Luconia, and the numerous islands in its vicinity. Embocadero.

The Galleons from Acapulco, generally pass through these straits; and it may be useful to give a brief description of the eastern entrance, in case any ships be disabled by a Tyfoong, or otherwise in distress, when proceeding to, or from China by the eastern passage, and find it indispensible to run for these straits.

Geo. site of Cape Espiritu Santo.

CAPE ESPIRITU SANTO, the N. Eastern extremity of the Island Samar, is bold high land, that may be seen 12 or 14 leagues; and is situated in lat. 12° 40′ N. lon. 125° 38′ E., by mean of the observations and chronometers of several ships which fell in with it when returning from China by the Eastern Passage.

To approach the Embocadero.

Ships steering for the Embocadero, generally make this cape, which is proper with an easterly or southerly wind; but as the North coast of Samar extends nearly West from the cape about 20 leagues to the entrance of the Embocadero, it seems advisable to steer direct for that strait, if the wind be northerly; because several small islands are scattered along the coast, and with this wind, it becomes a lee shore.

Port Palapa and its contiguous islands.

A few leagues West from Cape Espiritu Santo, the PORT OF PALAPA, is situated, having 6 and 5 fathoms water inside, where there is a chain of rocks near the eastern part; but the western part seems safe, according to the Spanish plan. This port is formed inside of the Island Batac or Batag, between it and the contiguous islands; there are 2 channels leading to the port, 1 on each side of Batac, but that to the westward, seems the best, which is formed betwixt the reef that projects from the island, and another reef projecting from the adjoining island Cahayaga. The course in, is about South, and the depths decrease from 18 or 20 fathoms at the entrance, to 8, 7, and 6 fathoms inside: good water, is got on the Island Laguan, which forms the S. W. side of the port.

Anchorage under Laguan.

About 4 or 5 miles to the S. W. of this port, there is good anchorage on the West side of the Island Laguan, near the village of that name; where a ship may anchor in 6, or 7 fathoms betwixt it and the Samar shore, sheltered from East and N. E. winds, but exposed to N. W. and westward.

To sail into the Embocadero.

The entrance of the Embocadero, formed betwixt the S. E. end of Luconia and the N. W. point of Samar, is contracted by a group of isles and rocks, which lie a little outside of the latter. The Isle St. Bernardino, is detached from these to the N. Westward, and on either side of it there is a passage, with soundings of 30 to 50 or 60 fathoms. Close to St. Bernardino there is a small islet, and to the westward, a group of isles and rocks will be perceived, contiguous to the point of Luconia; the channel is between these, and the islands Dalupiri, Capul, and others that lie to the southward; and then to the westward, between the N. E. side of the island Ticao and Luconia.

Port and road of St. Jacinto.

PORT ST. JACINTO, in lat. 12° 34′ N., is situated on the N. E. side of Ticao, which is the first large island to the westward of the entrance of Embocadero, distant about 9 or 10 leagues from St. Bernardino. This place may be easily known by a building, with some round bastions, forming a kind of fort, which stands on a rocky cliff, the land rising in hills behind it. The anchorage in the road, in 15 or 16 fathoms sand and gravel, is about a large ½ mile off shore, with the house or fort bearing S W. ¾ W., a pyramid rock to the southward of it South, the points which form the entrance of the harbour W. by N. ¼ N., and W. by S. ½ S., Sugar Loaf Hill on Luconia N. ¼ W., and the mouth of Sorsogon Harbour N. by E. ¾ E., distant about 4½ leagues. Ships may anchor in from 23 to 7 fathoms, but the bank being steep, it is proper coming in, during the night, to bring up as soon as possible after getting 26 or 24 fathoms, from which the water shoals pretty quick to 4½ fathoms. There is very little stream of tide in the road, which rises 6 feet; high water between 6 and 7 hours at full and change of the moon.

The South point of the entrance of the harbour, is fronted by a reef, which stretches along shore to the southward; and a reef projects out near ½ a mile from a point where there is a black rock, about a mile to the northward of the North point of the harbour's mouth. The latter is contracted by the reef on the South side, but the depths decrease regularly, to 10, 8, and 7 fathoms, inside in the port, where there is room for several ships; but the northern arm of it being very shoal, they are obliged to moor toward the South side, with the entrance partly open.

The watering place, is about 2 miles to the northward of the road, in a pool 10 or 12

yards above high water mark; into which, a small run descends through a valley among trees and bushes, and is not easily perceived, but the water is good.

The Galleons touch at this place, in their passage to, and from Acapulco: good beef, and tropical fruits, such as pine-apples, and water-melons, may be procured. About a league to the North of St. Jacinto, lies the bay or inlet of Tasdugan, having 10 and 12 fathoms water in it; and at the N. W. end of the island the bay or port of St. Miguel is situated, with 65 fathoms water in the entrance, and from 20 to 10 fathoms close to the reefs at the head of the bay.

Sorsogon Harbour.

SORSOGON HARBOUR, on the coast of Luconia, opposite to the North end of Ticao, is said to be safe: the island Bagatao, situated in the entrance, is connected with the East point by a shoal; the channel being betwixt its western point and the island Malahumasan, which projects southward from the land on the West side of the harbour. The soundings are irregular in the channel, from 7 or 8, to 12 or 14 fathoms, and nearly the same inside. Water is got on the East side of the harbour, which is well sheltered from all winds: and about 2 leagues from the outer part of the entrance, it opens out into a spacious lagoon or inner harbour, with soundings from 6 to 3 fathoms.

Directions.

Having rounded the N. W. extremity of Ticao, the track through the straits is to the W. S. W. betwixt the South point of the large island Burias and the North point of Masbate, another large island to the southward. From hence, the course is nearly W. N. W. about 23 leagues, to the passage between the South end of the large island Marinduque, and Banton and other islands that lie to the eastward of Mindora; which, with it, bound the channel on the South side. The passage continues to the westward betwixt the North coast of Mindora, and Green Island, Maricaba, and Luconia, which bound it to the northward; then round Point Santiago, the S. W. point of Luconia, and inside of Amul and the Luban Islands, if bound to Manilla Bay.

Where soundings are found in these straits, the depths are generally too great for anchorage; but contiguous to the passage, there are some small bays or ports, where vessels might anchor occasionally, exclusive of those already mentioned. Port Magna, at the middle of the N. E. side of the island Masbate, fronting the island Ticao, is thought to be a safe harbour. St. André's is a small port on the West side of the island Marinduque, a little southward of the N. W. point, fit for small vessels. On the North side of Mindora, there is anchorage in some places opposite to Green Island, the *best* of which, is Calapan Road, to the S. E. of that island, and directly inside of the Baco Isles.

Bays or harbours adjacent

Batangas Bay.

BATANGAS BAY, on the coast of Luconia, to the northward of the West end of Green Island, has a mud bank lining the bottom of it, with 7 and 8 fathoms close to, and regular soundings in the N. E. angle of the bay. Here, the depths are 6 and 7 fathoms very near the shore, increasing to 35 and 40 fathoms about 2 miles off, and a little farther out, no ground. A ship may anchor in this part of the bay, opposite to the convent of Batangas, where there is a grove of trees. At the N. W. part of the bay stands the village and fort of Bawang, and the land to the northward is cultivated to the tops of the hills, which rise with a gentle acclivity. The land is high on the East side, and low on the West side of the entrance of the bay, and no soundings are obtained until near the land on the East side, or until well in toward the northern shore.

East Coast of Luconia.

LUCONIA EAST COAST, forms a very great and deep bay, extending from about lat. 17° N. to the north part of the large island Catanduanes, situated in about lat. 14° 16′ N.; and the South end of this island is in lat. 13° 38′ N. lon. 124° 16′ E., and 16 or 18 leagues to the northward of the entrance of the Embocadero. The coast in several parts is fronted by coral reefs, with many islands interspersed along the southern part, betwixt the

Geo. site of Catanduanes.

bottom of the Great Bay and Catanduanes. Although there are some bays or harbours fit to receive small vessels, they are little known, and seem intricate to enter. Large ships ought, therefore, not to approach this coast in the N. E. monsoon betwixt Cape Engano and the island Catanduanes, to prevent being embayed; for if by any accident they fall to the westward near Cape Espiritu Santo, when proceeding by the eastern passage to China, they ought to endeavour to regain sufficient easting with the Embocadero under their lee, that they may be enabled to steer for it, in case of necessity; or push through it and the straits of Manilla, and afterward proceed along the West coast of Luconia to the northward, at least as far as Cape Bolina, before crossing over for the coast of China.

Places affording shelter.

The places on the East coast, affording anchorage, or tolerable shelter from N. E. winds, are Davilican Bay, a little to the southward of lat. 17° N., and Casiguran Bay, about 23 leagues farther to the southward. Also close under the West side of the island Polo, which is in about lat. 15° 8′ N. distant 12 or 14 leagues southward from Casiguran Bay; there being soundings betwixt the island and the main, and directly West from the South point of it, there is an inlet into a harbour for boats, having 1½ fathom in the entrance, and 3 or 4 fathoms inside. This part of the coast betwixt Polo, and Alabat Island, situated 7 or 8 leagues more to the southward, is called Lampon Bay.

St. Miguel de Naga Bay.

ST. MIGUEL DE NAGA, about 16 leagues to the westward of the North end of Catanduanes, is a large bay, with several islands fronting the entrance, and a reef surrounding the East point; it is *said* to have anchorage, and shelter from most winds.

Geo. site of Port Seeseeran.

PORT SEESEERAN, in lat. 14° 20′ N. lon. 123° 40′ E., situated about 8 leagues eastward of the entrance of the bay last mentioned, and about the same distance to the West of the N. W. end of Catanduanes, is a safe harbour, being sheltered from the sea by a group of islands, of which the largest fronting it, is called Quinalazag or Ticos. The entrance is close round the East point of this island, the channel being bounded by small isles, and an extensive reef to the eastward. From 30 or 40 fathoms outside, the depths decrease steering South into the entrance of the port, to 15 and 12 fathoms; and when round the East point of the island Quinalazag, a ship should haul to the westward, and anchor under it in 7, 6, or 5 fathoms water, where she will be sheltered from all winds, and have the village Bahi on the Luconia shore, opposite to her. The peaked mountain Ysarroc, stands on the inner part of the peninsula that separates the bay of St. Miguel de Naga from port Seeseeran, about 3 leagues to the westward of the latter. There are several small islands off the N. W. part of Catanduanes, and a reef lining its western side; but the channel is safe betwixt it and the islands that border the coast of Luconia, and this is the passage frequented by Spanish ships, when proceeding from Manilla through the Embocadero toward port Seeseeran.

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## *WEST COAST of BORNEO: DIRECTIONS for SAILING along it, also between it and BILLITON by the CARIMATA PASSAGE, toward the STRAITS EAST of JAVA, or to the STRAIT of MACASSAR.*

Caution for ships touching on the

THE PREDATORY, and treacherous disposition of the inhabitants of the extensive coasts which encircle the great island Borneo, has *now* discouraged almost every European

from venturing to trade there. On the N. W. coast particularly, they have in the river of Borneo Proper, about 40 or 50 large proas, belonging to the town, which are instantly armed, and filled with men, when a ship is to be assaulted. Therefore, except in a large ship well fitted for defence, it is not safe to remain in the road; and *certain destruction*, to go up the river to the town. If a boat is sent on shore, the Rajah will offer to trade, when the ship is brought into the river, and when the commander comes to visit him. Beware of complying with either of these requests, for by doing so, Captain Dixon, of the May, (a stout ship well armed) was massacred with his 4 officers, and part of the crew, by these rapacious pirates; and the ship and cargo seized by them. About 3 months after this catastrophe, the Warren Hastings, mounting about 16 guns, anchored in the road of Borneo Proper, and after remaining a few days, and communicating in her boat with the town, 28 large proas came out of the river to attack her, which obliged her to leave this inhospitable place without trading. It may therefore, be only necessary, to notice briefly, the principal places on this coast, which are sometimes visited by European navigators. N. W. coast of Borneo.

ABAI HARBOUR, in about lat. 6° 21′ N., distant 15 or 16 leagues S. W. by S. nearly from Tanjong Sampanmangio the North point of Borneo, is formed by the peaked island Oosookan, which lies about a league to the westward of Tampassook Point. The entrance is on the East side of the island, but there is not depth in the harbour at high water for a vessel drawing above 12 feet, nor is the depths much greater in the river. About 1½ mile North from Oosookan, there is a reef of rocks partly visible at half ebb, and several coral banks, with from 4 to 6 fathoms on them, are situated in the offing betwixt this place and the North point of Borneo; also the Mantannane Isles in lat. 6° 39′ N., and a rock or reef is said to lie 4 or 5 leagues to the northward of them. Soundings extend a great way out from the coast, and are pretty regular in sailing along it; there are several bays without shelter, and Batomande Point situated about 5 leagues to the southward of the North point of Borneo, has a reef of rocks partly above water, projecting from it, which ought to have a birth of ½ a mile or more. A chain of mountains stretches along the coast, which, at Tampassook, and some other parts, is low near the sea. Abai Harbour and coast adjacent.

AMBOON HARBOUR, separated by a bay, from Oosookan Island, has a small isle in the entrance, and *is said* to be pretty safe, with sufficient depth of water. Tanjong Kaetan about 7 leagues farther to the S. W., is the North point of a great bay, in which Pulo Gaya and other islands, stretch along the coast to Pulo Teega in lat. 5° 38′ N., and 14 leagues to the S. W. of Tanjong Kaeton; Mangallom Island, with some coral shoals to the westward of it, are situated in the offing near the edge of the bank of soundings. Keemanee's Point, about 5 miles S. W. by S. from Pulo Teega (three islands) has a reef projecting 1½ mile; and W. N. W. 5 or 6 miles from it, there is a dry sand bank, and a shoal with 2 fathoms about 2½ leagues to the S. Westward of the latter. To the eastward of the point, there is good shelter in 7 fathoms mud, from S. W. and West winds. Amboon Harbour and neighbouring coast.

LABOOAN ISLAND, about 7 or 8 leagues S. W. from Keemanees Point, is of moderate height: several isles off its S. E. part, stretch toward the Borneo Shore, leaving a passage for small vessels. From its S. W. point, 4 isles connected by rocks, project to the S. S. W. about 5 miles, with an islet and a reef stretching from their extremity: the 2 next to Labooan, are called Corooman, and the others Roosoocan. The channel into Borneo Road, is between these and Tree Island, (or Two Mast Island) which is small, and distant about 2½ leagues to the S. S. Westward of them. The depths in the channel are from 30 to 20 fathoms, and although the bottom is hard, with irregular soundings in some parts near the islands, they may be approached within 2 miles or less. Labooan, and the islands around Borneo Road.

PULO MOOARRO, distant 4 or 5 miles southward from Tree Island, forms the West side of the entrance of Borneo River, and is separated by a narrow channel from the main land. A sand or reef stretches from its point to the N. E. 3 or 4 miles, then round to N. W., toward Tree Island, and the latter is also fronted by a reef; the change from soft to hard ground, denotes the approach to the reef off Pulo Mooarro. The channel into the river is close to the S. E. point, and along the South side of Pulo Mooarro, being bounded on the other side by an extensive mud bank. The town of Borneo, or Borneo Proper, is 4½ leagues up the river, which is navigable by vessels of considerable burthen; Junks, of 500 tons measurement, are built here, for the China trade, which are navigated by Chinese.

River and town.

Anchorage.

The anchorage in the road, is about 5 or 6 miles to the N. E. of Pulo Mooarro, in 9 or 10 fathoms mud; but the whole space between the entrance of the river and the islands fronting Labooan, may be considered as the road. The Warren Hastings, at anchor in 21 fathoms mud, had the East point of Pulo Mooarro bearing S. by E. about 6 or 7 miles distant, Tree Island W. S. W., the islands to the northward from N. ½ E. to N. E. by E., distant from the South Roosoocan 5 or 6 miles, and made the lat. 5° 0′ N. by observation. Some accounts place Borneo Road several miles more northerly; Captain Kirton's plan of the river, makes Pulo Mooarro in lat. 5° 4′ N. There are only 2 tides in 24 hours, the flood in the road, setting in the S. W. monsoon 8 hours S. Easterly, and the ebb 14 hours to the N. W., but not strong.

Tanjong Barram, and the coast from Borneo Road.

TANJONG BARRAM, or LOW CAPE, has a reef of rocks and breakers projecting a great way to the S. W. and Westward; it is distant about 27 leagues to the W. S. W. of Borneo Road, the coast between them forming a bay, with irregular soundings of 15 to 30 fathoms about 4 to 6 leagues off shore. In the offing, there are some small isles and shoals, but their true positions are very uncertain; about 7 leagues nearly W. N. W. from Tree Island, off the entrance of Borneo Road, there is a coral bank, having on it 5 or 6 fathoms.

Tanjong Dattoo, and coast from Tanjong Barram.

TANJONG DATTOO, in about lat. 3° N., forming the West point of Sedang Bay, (in which are a number of small isles) has a reef projecting from it, and an islet on the extremity. The coast between it and Tanjong Barram, distant about 60 leagues, forms 2 large bays, separated by Tanjong Sisor, a point which lies about 26 leagues from the latter. There are some dangers abreast of this point in the offing, not well known: in sailing along, they are best avoided by keeping within 4 or 5 leagues off the coast.

Tanjong Apee, and adjacent coast.

TANJONG APEE, in about lat. 1° 55′ N., distant about 30 leagues S. Westward from Tanjong Dattoo, is fronted by a reef, and the hills over it being connected by low land, gives them the appearance of islands when seen from the northward. The coast in this space forms a concavity, is safe to approach, and the South Natuna Islands extend out in the offing, to the northward of Tanjong Apee, which have been already described in the 3d section, under the title "China Sea." The tides run along the N. W. coast of Borneo from 1 to 2 miles an hour; the stream or current to the N. Eastward, runs strongest in the S. W. monsoon, and in the northerly monsoon, the current or tide to the S. W. prevails. Land and sea breezes are common, particularly in the S. W. monsoon.

Geo. site of Sambas, coast adjoining;

SAMBAS RIVER'S ENTRANCE, in lat. 1° 13½′ N., lon. 109° 3′ E. by lunar observations, distant about 16 leagues southward of Tanjong Apee, has a wide entrance, with some islets touching the North point, and 2 hills on the other. The town is about 10 leagues up the river, on the South branch; the principal branch is wide, and the sea flowing into it a great way, makes the water brackish 4 or 5 leagues up; so that ships in want of water, are obliged to get it from a great distance. The anchorage in the road, is off the mouth of the river bearing East or E. ½ N., in any depth thought proper from 15 to 5 fathoms, the

decrease being regular over a soft bottom, to 4 fathoms about 1½ or 2 miles off shore. The soundings are very regular along this part of the coast, and extend across the sea to Pulo Lingin, and to the entrance of the strait of Sincapour. Sambas is 1 of the places on the Borneo coast, sometimes visited by ships employed in the eastern trade from Bengal; it was fortified by a piratical Rajah, who was driven to the interior by a British force sent from Batavia in 1812, but he is said to have returned to it again. In lat. 1° 4′ N. Slackoo Road is situated, where vessels sometimes stop to trade.

MAMPAVA POINT, in lat. 0° 17½′ N., distant about 19 leagues South a little westerly from Sambas River, is 4 miles to the westward of the mouth of Mampava River, only navigable by proas, and has a fort at the entrance, with the town of Mampava situated a few miles inside. The anchorage in the road, is in 5 to 8 fathoms, about 3 or 4 miles off shore, with the mouth of the river N. by E. ½ E.; or to the westward of the point, at discretion, where there is a landing place, for the soundings are regular all round, decreasing gradually to 4 fathoms. Pulo Dattoo is a high island bearing W. by S. ½ S., about 9 leagues from Mampava Road, and several islands stretch along the coast to Battooblat Hill and Point, which is nearly mid-way betwixt Mampava Point and Sambas River. These islands are safe to approach, with a channel of 6 to 8 fathoms inside of all the southernmost; but the group contiguous to Battooblat Point, being formed of isles near to each other, it is proper for ships to pass outside of the outermost 1, called Lamookatan. Mampava.

In Mampava Road the tides run about 2 miles per hour, nearly E. S. E. and opposite.

PONTIANA, or LEWA RIVER'S MOUTH, in lat. 0° 2′ N., lon. 109° 12′ E., is about 7 leagues to the S. Eastward of Mampava Point, the coast between them forming a bay. The anchorage in the road is in from 3½ to 5½ fathoms, with the river's mouth bearing E. by S. ½ S. or E. S. E., Pulo Dattoo W. ¼ N. or W. ½ N., and the extremes of Borneo from S. ¼ E. to N. N. W. ½ W., off shore about 4 or 5 miles. The Princess Charlotte of Wales, on the 1st of June, 1813, anchored in 5½ fathoms, with the extremes of the land bearing from N. N. E. to S. by W., the entrance of the river E. N. E., off shore 5 or 6 miles, lat. observed 0° 1′ N. A shoal mud bank projects out a great way from the mouth of the river, and although the bar is nearly dry at low water, there is 8 or 10 feet on it at high spring tides. The town is about 12 miles from the river's mouth, and has a fort, and at Balu-Lagong about 7 miles up, there is a fort on each side, with 14 or 15 heavy guns mounted. These 2 places are sometimes visited by the Bengal traders: some bullocks and hogs, may be procured here, and also at Mampava; but boats must go far up the river to procure fresh water, which makes watering at Pontiana River very inconvenient. Geo. site of Pontiana.

From Pontiana River, the coast stretches South and S. by E. about 20 leagues to Tanjong Factie or Fatteye, in about lat. 1° 15′ S., and from hence it takes an easterly direction 8 or 9 leagues, having a channel of from 3 to 4 fathoms between Tanjong Fatteye and the large group of islets that front it. From this point numerous small islands extend southward and S. Westward to Carimata, which is distant from the former 15 or 16 leagues. Between the group of isles nearest to Tanjong Fatteye and others to the southward, there is a good channel with 5, 6, and 7 fathoms water, through which the fleet passed in 1811, when bound to the conquest of Java; and nearer to Carimata, there is another channel betwixt the small isles to the S. Eastward of it, and betwixt other isles and Carimata. The Osterly went through this passage, which was found very intricate, and in 1 part, she had only 5 fathoms rocky bottom, betwixt the islands that lie directly East from Carimata. It is not advisable to pass through the latter in a large ship. Lieutenant Kempthorne in H. M. brig Diana, carried soundings mostly of 3 to 3¾ fathoms, when rounding Tanjong Fatteye, in proceeding along the coast by the *inner passage*. She had mostly light winds and southerly currents, Coast from thence southward.

and was from the 4th to the 23d of November, 1808, getting from lat. 4° S. to Pontiana Road.

Succadana. SUCCADANA, in about lat. 1° 16′ S. distant 7 or 8 leagues to the eastward of Tanjong Fatteye and situated on the East side of the deep bay, inside of that point, has good anchorage in 5 or 6 fathoms in the road, with a group of isles to the southward. This place is also visited at times by the eastern traders from Bengal. Although at the foregoing places, it is not so dangerous to stop, as at Borneo River, ships ought, nevertheless, to be well prepared for defence, and the officers continually on the watch, for they are liable to an attack.*

A caution.

Tanjong Sambar. From Succadana, the coast extends South and S. by W. about 34 leagues to Tanjong Sambar in about lat. 2° 53′ South, which is the S. W. point of Borneo, and with part of the circumjacent coast, is low land. The coast between these places has seldom been approached under 10 or 12 fathoms, being fronted by islets, or rocky ground in some parts; but the expedition against Java, having proceeded along this part of the coast, by a route previously little known, renders a description of it indispensable.

Inner Channel. INNER CHANNEL, formed among the islands situated between the coast of Borneo and Carimata, although narrow in some parts, has moderate depths, with generally good anchorage, and seems preferable to the route West of Carimata and Souroutou, for ships which have to work along the coast against the monsoon, whether bound to the northward or southward.

Geo. site of Panumbagan Island. PULO PANUMBANGAN, in lat. 1° 12′ S., lon. 109° 14′ E. by chronometers, extending about 2 leagues E. N. E. and W. S. W. is high, and forms the North entrance of the Inner Channel, and off its N. W. side, affords good anchorage from southerly winds in 5½ or 6 fathoms. Fresh Water Bay, at this part of the Island, has 2 runs of good water, the westernmost of which is the largest, where you fill the water behind a large black rock on the beach; the boats may approach close, or the casks can be landed on the beach which consists of fine sand. Here the fleet watered in July, 1811, when bound to attack Java; the William Pitt anchored in 5¾ fathoms soft mud, on the 30th of June, with the Island Panumbangan bearing S. ½ E. to N. E. off shore 1½ mile, and off the watering place 2 miles, the 1st and best watering place E. by S. ¼ S., 2d watering place S. E. by E., 3d watering place S. E., and Massa Teega Islands N. ½ E. All these watering places are fronted by fine sandy beaches, and easily discerned: there are spars fit for topmasts on the Island, but the trees seem to be too heavy.

Directions. If bound to the southward through the Inner Channel, the Borneo coast may be approached to 8 or 9 fathoms at discretion till near the 3 small Isles Massa Teega, situated in lat. 0° 55′ N. distant about 2 leagues from the coast, and bear North from Panumbangan. In working, do not stand too far to the westward, on account of Greig's Shoal, but you may borrow toward the west part of Massa Teega to 8½ or 9 fathoms, and off to 14 or 15 fathoms near the Lima Islands, which are a close group of small isles, united by reefs, distant 7 or 8 leagues to the westward of Panumbangan. PULO MALAPIS forming a group of 3 high islands, with some contiguous islets much farther to the eastward, 1 of which is called Double Island, lies to the S. W. of Panumbangan; Greig's Channel, or the entrance of the Inner Channel, is formed between these, by leaving to the northward Pulo Seery, a small

* Captain Sadler, of the ship Transfer, of Calcutta was attacked in his boat and killed, in Mampava River by the wiles of the Rajah of that place, who was indebted to that commander about 30,000 dollars for opium and piece-goods; this Rajah also poisoned the Master of a Chinese Junk to whom he was indebted about 8000 dollars. There are many Chinese settled at these places on the West coast of Borneo, who together with the Bugges (many of whom also reside here) are the only industrious inhabitants; the Malays being very indolent, and treacherous.

isle off the West end of Panumbangan, and all the islets of Malapis group must be left to the southward; the course in steering through is S. Easterly, and the depths from 12 to 18 fathoms, mostly hard ground, which again becomes soft when through the channel. To the eastward of Panumbangan there are 4 and 3½ fathoms, where small vessels may pass between it and the coast of Borneo, in soft bottom and regular soundings; here, in about lat. 1° 11′ S. is situated Goonong Myang Mountain, at a small distance inland, with low land fronting the sea, the South extreme of which in about lat. 1° 16′ S. forms Tanjong Sattai, Fatteye, or Factie.

Having passed through the channel to the West of Panumbangan, the course is S. Easterly 5 or 6 leagues to PULO PAPAN, leaving to the westward the 2 Passage Islands, the soundings in this track being from 7 to 11 fathoms near the latter, shoaling to 5 fathoms toward the Button, a small isle to the S. Eastward of Panumbangan, inside of which are 4 and 3½ fathoms. Pulo Papan.

Pulo Papan, in lat. 1° 28′ S. forms 2 small groups, betwixt which is the Papan Channel, about a mile wide, with from 9 to 15 fathoms water, formed between the West group and East island which is the largest, with 2 islets near its North side, and bounds the channel on the East side. The passage to the eastward of Pulo Papan is also safe, with 12 fathoms near the island, decreasing fast toward the coast.

After passing through the Papan Channel the course is S. S. Eastward, leaving to the West Birdnest Islands,* and all others which lie to the East and S. E. of Carimata; the fair track is between these and the coast of Borneo, and the depths 9 to 12 fathoms near the islands, decreasing toward the coast, but not always regular.

In proceeding along the coast, care must be taken not to approach it too close in the night, for in lat. 2° 13′ S. to 2° 16′ S., Minto Rocks lie 4 or 5 miles off shore, some of which are near the water's edge, with a sand to the S. Eastward. A hill on the main bearing E. 9½° N. from them, in lat. 2° 14′ S. will be a guide in the day, and farther to the E. S. Eastward, in lat. 2° 22′ S. is situated a high peak. About 5 or 6 leagues off this part of the coast, the depths are mostly from 14 to 17 fathoms, and from 9 to 11 fathoms about 4 miles outside of Minto Rocks, but if you haul in for Rendezvous Island, they will decrease to 7, 6, or 5 fathoms near the reef that lines its western point, and projects around it to the South and eastward. Minto Rocks.

RENDEZVOUS ISLAND, in lat. 2° 44′ S., lon. 110° 3′ E. (its West point) or 1° 4′ E. of Cirencester's Sand Bank, by chronometers,† extends about 5 leagues to the N. E., and a chain of small islands and reefs joins it nearly to the main, which stretches also to southward along the coast to Pulo Mancap, and fronted with shoal water. Captain Graham, of the William Pitt, could scarcely find a passage in his cutter between Rendezvous Island and the main; and about 4 leagues S. by W. from the West point of the island, lies a bank with 3 or 3½ fathoms, which makes it proper in leaving the anchorage at the N. W. part of the island, to haul off to the S. Westward to give a birth to this bank. When the fleet lay at Rendezvous Island in July, land and sea breezes prevailed, the former at East and E. S. E., veering to S. S. E. in a sea breeze; the island shews in hummocks, but cannot be seen above 5 or 6 leagues, and the West point forms in a bluff when viewed from S. W. or southward. Geo. site of Rendezvous Island.

The fleet under Commodore Broughton, of about 40 sail, assembled at this island, after having worked through the foregoing passage, or Inner Channel. The William Pitt anchored in 4¾ fathoms on the 11th of July, 1811, off shore about 4 miles, West point of Rendezvous Island bearing S. ½ W., its North point E. by N. ½ N., a small isle off this point E. by N. ¾ N., another isle E. N. E., a 3d small isle North, with the trees on it just Anchorage.

* The Osterly passed through among these, and afterward near the East side of Carimata, but she found that route very intricate, and had several times rocky bottom and very shoal water.

† This longitude was settled by Lieut. Ross in the Discovery, by excellent chronometers, but the observations of the fleet made it several miles more to the westward.

visible from the poop, North extreme of the land of Borneo N. N. E. The first 2 isles are united by a coral reef, which extends 2 miles N. N. W. from the second island, having near its extremity a large rock 20 feet above water; from this rock in a N. E. direction there is another island about 4 miles long, surrounded by coral reefs.

Although coral reefs, with sharp pointed rocks visible at low water, project out from 1 to 3 miles from most parts of Rendezvous Island, yet the western side where the fleet lay, appeared tolerably clear, with a sandy beach, where wells were dug above high water mark, and afforded very good water. From the West point of the island, the land forms an elbow, by which there is shelter from all winds East of North to South, with smooth water; and the tides were found here, to be more regular than at any other part of the West coast of Borneo, the rise 8 or 9 feet. About 4 or 5 miles South of the West point of the island, lie 3 small isles, with coral reefs projecting to them; other isles bear South from the point about 4 or 5 leagues, and they are all fronted by shoal water, the depth being only 5 fathoms about 3½ miles to the westward of the West point of Rendezvous Island.

Geo. site of Pulo Mancap.

PULO MANCAP, MUNCOO,* or MANKOKH, in lat. 3° 4¾′ S., lon. 110° 11½′ E., or 3° 18½′ East of Edam Island, by the observations of Lieutenant Ross of the Discovery, with good chronometers, is a small low island, which may be seen about 5 leagues from the deck of a large ship, and is distant about 2½ leagues to the southward of Tanjong Sambar: near it to the N. N. Eastward, there is said to lie another small isle, which appeared as 3 bushy islets or rocks, to Lieutenant Ross, when examining the surrounding shoal. Other islands front Tanjong Sambar to the westward, extending in a northerly direction toward Rendezvous Island.

Shoal Bank.

To the West and S. Westward, Pulo Mancap may be approached to 16 or 17 fathoms, at the distance of 4½ or 4 leagues, but not nearer; for, with it bearing East distant 10 miles, the Discovery got suddenly into 4 and 3¾ fathoms hard sand, on the shoal bank that encircles the island; when it bore N. 44° E. distant about 7 miles, she had 3¾ fathoms fine sand, and with it bearing N. N. E. ¼ E. about 10 or 12 miles, seen from the deck, she struck on the ground, though drawing little water, occasioned by the swell. The island ought not to be brought to the northward of N. E. by N. while in sight from the mast head, for if it bear N. N. E. ¼ E. about 6 leagues distant, you will suddenly get into shoal water on some of the spits that stretch far to the southward, having from 10 to 17 fathoms soft bottom near them.

Mancap shoals. Walpole grounded.

MANCAP SHOAL, placed South from the island of this name, to the distance of 6½ leagues, or with its southern extremity in lat. 3° 22′ S., by the Walpole's account, which ship grounded on it. This is, however, only the situation of the southern limit of the *inner shoal*, from whence, other shoal banks, detached from each other, stretch S. S. W. and S. by W. to lat. 3° 46′, or 3° 48′ S., having large swatches or channels betwixt some of them, through which several ships have passed.

The Bombay Castle, on the 12th of January, 1794, with Pulo Mancap in sight from the mizen shrouds, bearing N. N. E. ¼ E., distant about 6 leagues, shoaled suddenly to 7 fathoms and anchored, a spit of shoal water bearing from S. W. to S. E. ½ S., about 1 mile distant, on which the boats found ¼ less 5 fathoms in some places, with overfalls and very irregular depths to the distance of 3 miles S. E. and S. Westward. After weighing, she steered between S. S. W. and S. W., crossed the spit in 5 fathoms, then deepened to 14 fathoms, and shoaled again to 7 fathoms; afterward, deepened gradually to 22 fathoms.

Bombay Castle got near to danger.

Having run about 5 miles from the place where she was at anchor, the appearance of a shoal

* It is said to be named from Muncoo, a cup or bowl. In the 1st edition of this work, the longitude assigned to this island was 110° 7′ E., from a mean of chronometric observations by different ships, but its situation as stated by Lieut. Ross, is probably nearest the truth.

was seen about 2 miles off, very conspicuous, by broken water extending from E. N. E. to E. by S. This was found to be in lat. 3° 26′ S., by noon observation.

The Discovery, Lieut. Ross, on the 26th of May, 1814, after striking on the *inner* shoal in $2\frac{3}{4}$ fathoms, with Pulo Mancap in sight from the deck bearing N. N. E. $\frac{1}{4}$ E. distant 10 or 12 miles, steered South, and soon deepened into 10, 11 and 13 fathoms mud, and shoaled again to 6 fathoms sand, which appeared to have less water on its western part, Pulo Mancap then visible from the deck, bearing N. N. E. $\frac{1}{4}$ E., distant about 12 miles. From hence steering S. by W., soon deepened into a mud channel of 17 fathoms, shortly after shoaled suddenly to 5 fathoms sand on another long narrow spit extending W. N. W. and E. S. E., Pulo Mancap not visible from the deck; when over it, deepened to 15 fathoms mud, and shortly after shoaled to 7 fathoms sand, and anchored, seeing breakers bearing S. 54° E., distant 2 miles. The boat passed over a spit of $2\frac{1}{4}$ fathoms, about half way between the ship and the breakers, close to which there is $1\frac{1}{2}$ fathoms water; this danger is situated in lat. 3° 24′ S., and $3\frac{1}{2}$ miles West of the meridian of Pulo Mancap, and appears to be the danger mentioned above, seen by the Bombay Castle.

Discovery got on several spits,

and near to breakers.

H. M. S. Fox, with a fleet in company, on the 30th of October, 1797, had 11 fathoms soft mud at noon; shortly after, the water shoaled suddenly to 9 fathoms, and she immediately grounded, but with some exertion was got off, shortly after. Captain Heywood, (then a Lieut. in the Fox) sounded in the cutter to the N. E. and E. N. Eastward, and had continued overfalls from 7 to 2 fathoms, steering in those directions, to the distance of $2\frac{1}{2}$ miles from the ship. That part of the shoal where the ship grounded, from noon observation, was found to be in lat. 3° 32′ S. lon. 110° 4′ E. by chronometer from Malacca; or S. 13° W., 11 or 12 miles distant from the *supposed* southern verge of Mancap Shoal. When in lat. 3° 36′ S., she steered E. S. Eastward, and had no less than 19 or 20 fathoms water.

Geo. site of a shoal where the Fox grounded.

The Princess Amelia, Walmer Castle, Hope and Taunton Castle, in company, at $1\frac{1}{2}$ P. M. on the 15th of November, 1811, were steering S. E. by E., with the wind at S. W., squally and rain, in 20 fathoms water, when breakers were seen to leeward; the Hope shoaled to 15 fathoms and tacked, but the Princess Amelia missing stays, was obliged to anchor immediately in 19 fathoms, with the breakers to leeward bearing from N. W. round by the eastward to S. S. E. $\frac{1}{2}$ E., distant about $\frac{1}{2}$ a mile, and the Walmer Castle anchored near her. By mean of their noon observations and chronometers, this dangerous shoal, is situated in lat. 3° $31\frac{1}{2}$′ S. lon. 110° 4′ E., and is (no doubt) that on which the Fox grounded, although no breakers were then visible, probably occasioned by the tide being high at that time, with a smooth sea; whereas, a heavy swell prevailed, when the above-mentioned ships, got embarrassed with the shoal.

Princess Amelia and other ships got close to breakers.

Geo. site.

These *outer* shoals off Pulo Mancap, bound the southern part of the Carimata Passage, (or Strait of Billiton) to the eastward; betwixt which, and the Discovery's eastern bank, which seems to be the nearest danger on its western side, the channel is 17 or 18 leagues wide.

The True Briton, with other ships in company, on December 31st, 1801, steering eastward to round Mancap Shoal, got suddenly into $6\frac{1}{4}$ fathoms red clay and mud, in lat. 3° 30′ S. by double altitudes, lon. 110° 5′ E. or 1° 23′ E. from the West end of Souroutou by chronometer. The Asia found a channel, through 1 of the swatches between the banks; but the True Briton steered to the southward on the West side of them; when abreast of the Knowl, in about lat. 3° 46′ S., which is the southernmost patch of Mancap Shoals, the depth decreased in 3 casts from 18 to 10 fathoms, in edging away S. E. toward its western edge.

Betwixt this southernmost patch, and that on which the Fox grounded, there is a good channel, by keeping in lat. 3° 36′ to 3° 42′ S., but when the latitude is not correctly known by observation, it is advisable to pass round to the southward of them, in about lat. 3° 49′ or 3° 50′ S. Although the bottom, near, and among these shoals, is generally a mixture of red

and green clay, with mud; yet, the soundings are very irregular, with overfalls, making it prudent not to come under 15 or 16 fathoms toward them.

Carimata Passage. CARIMATA PASSAGE, or OUTER CHANNEL, called also the STRAIT of BILLITON, is bounded on the East side by Carimata, Souroutou, and the other islands adjacent to the S. W. part of Borneo; and on the West side, by the Island Billiton, with its adjoining isles and dangers. Ships from Malacca Strait, when bound by the eastern passage to China, or to the Molucca Islands, generally proceed through the Carimata Passage after October, when the N. W. monsoon prevails to the southward of the equator.

This passage has been also frequented at various times, by ships bound from China to Europe during war: notwithstanding, there appear to be several dangers nearly in the track followed by those ships, rendering great circumspection indispensable; but the dangers which bound this passage on each side, having been correctly ascertained, by Lieuts. Ross and Maughan, of the Bombay Marine, it may now be navigated with much greater safety than formerly.

To approach it when coming from China; Ships proceeding from China toward the Carimata Passage, in the N. E. monsoon, should endeavour to see the East side of the Grand Natuna, giving it a birth of 6, 7, or 8 leagues; having passed it, they should steer about S. by W. to clear the South Natunas, leaving them to the eastward; then a S. $\frac{1}{2}$ W. course will carry them fair toward Direction Island. If they pass outside of it, a S. $\frac{1}{4}$ E. course from thence, will bring them in sight of Carimata bearing about S. E.; but it is prudent to keep well out to the westward until Carimata bear E. by S. or East, to avoid the following danger.

Greig's Shoal, GREIG'S SHOAL, was discovered by Capt. William Greig, of the ship Lord Minto, in 1809, and he gives the following description of it, in a letter dated Malacca, 14th of October, 1809.

"This dangerous shoal, we got upon at noon, on the 9th of June last, and found it to extend from lat. 0° 52′ S. to lat. 0° 58′ S.; although there is deep water within this extent, I think it ought to be considered as 1 shoal. On both extremes of it, we were often in nearly the same depth of water as the vessel drew, which was 13 feet, and this was in steering through between much shoaler spots, with the body of Carimata then seen from the deck, bearing between S. S. E. $\frac{3}{4}$ E. and S. E. by S., and the shoal bears nearly N. $\frac{1}{4}$ W. from the West point of Souroutou."

This may probably be the shoal, which the ship General Wellesley struck upon, as cloudy weather prevented her from determining its situation, but she places it in about lat. 1° 19′ S., to the northward of Souroutou. The journal states, "at 6 A. M. Carimata bore East 6 or 8 leagues, steering to the northward, struck on a reef at 10 A. M. and passed between the rocks, some of which are 4, 5, and 6 feet under water; hauled off N. N. W. and soon deepened to 12 and 13 fathoms. Near noon, passed over a bank of sand with 6 fathoms water on it; but the weather being cloudy, got no observation, nor could any land be seen."

Directions. SHIPS, coming from Sincapour Strait, should steer from Pedro Branco E. by S. 9 or 10 leagues, if the wind permit, and E. S. E. about 8 or 9 leagues more, to give a birth to the Dogger Banks: afterward, they should pass to the southward of the Island St. Barbe, and from thence, steer for Souroutou, but with West or S. W. winds, they may round the North part of Billiton at a moderate distance, then pass to the southward of the Ontario Shoal, giving a birth afterward to the Montaran Islands.

Geo. site of Carimata. KRAMATA, or CARIMATA, is a high island, about 3½ leagues in extent, the peak or most elevated hill, being about 2000 feet high, may be seen at the distance of 15 or 16 leagues, and is situated in lat. 1° 36½′ S., lon. 108° 54½′ E., and the N. W. end of the island is in lat. 1° 33′ S., lon. 108° 49′ E. by chronometers. About 4½ or 5 leagues distant, bear-

ing North from the northern side of this island, there is a group of islets called Lima Isles, with soundings of 12 to 14 fathoms near them; which are the outermost of those small islands that stretch from Carimata toward the *Borneo* Shore.

SOUROUTOU, situated at a small distance from the S. W. part of Carimata, and separated from it by a narrow channel, is little more than half the height, and much smaller than the other, but may be seen 9 or 10 leagues. The West end is in lat. 1° 42′ S., lon. 108° 41½′ E. by* mean of chronometers from Malacca and from Grand Ladrone; at a sandy beach on the South side of the island, and near the East point, there is a good watering place, but high water is required for a large boat to get over a reef, near to which you may anchor in 7 fathoms mud. Fresh water, it *is said*, can also be got at the West end of the island at the foot of a hill of moderate height, where a ship may anchor in 10 fathoms. Close to the West point of Souroutou, there is a small island called the Quoin from its appearance; about 2 or 3 miles outside of which, the depths are 16 and 17 fathoms. Souroutou. Geo. site.

ONTARIO'S SHOAL, on which the American ship of that name, Captain J. Whetton, was wrecked on the 4th of January, 1798, is very dangerous; being situated in the direct track *formerly* recommended to ships, when passing between Souroutou and Billiton. It extends W. N. W. and E. S. E. about ½ a mile, and is composed of sharp spiral rocks, with the tops of some of them dry at low water spring tides; but the small break against their sharp points, cannot be distinguished from the topping of a common sea; and the shoal is steep to, having 18 and 19 fathoms at a ship's length from the rocks. From the Ontario's wreck, the N. E. end of Quoin Island was just shut in with the West end of Souroutou; the East end of Souroutou N. N. E., open about a ¼ point from the West end of Carimata, and distant about 6½ leagues. Since the Ontario was wrecked on this shoal, the Duke of Clarence, and Cirencester, have struck on it, and the Coromandel was lately wrecked on the same shoal. Ontario's Reef.

The Cirencester grounded on this shoal, near midnight, on the 9th of November, 1810, and by carrying out the stream anchor, she hove off it at 6 A. M.: that part where the ship grounded, was found to stretch W. N. W. and E. S. E. about 3 cable's lengths, its eastern side taking a sharp bend round to South and S. Westward; and no part of the shoal was visible until almost close to it, except on a patch at the southern extremity, the sea was a little discoloured by the rocks being near the surface. The soundings are no guide in the approach to this dangerous shoal, there being 23 and 24 fathoms close to it on the North and East sides, from 18 to 25 fathoms nearly close to the rocks on the West side, and 25 fathoms clay at the distance of a cable's length.

The boats found irregular depths on the reef, of 5 and 6 fathoms to 12 feet. When the ship was upon it, the West end of Souroutou (or outer extreme of the land,) bore N. ¼ E., a small island in the middle of the opening between Carimata and Souroutou N. N. E. ½ E., the peak or highest part of Carimata N. E. ¾ E., observed lat. 2° 2′ S. This shoal, was examined by Lieut. Ross, in the Company's surveying ship, Discovery, who found it ½ a mile in extent W. N. W. and E. S. E.; the boat had 1½ fathom in sounding on it about high water, and in many places the depth appeared to be less. He made the shoal in lat. 2° 1′ 15″ S., lon. 108° 39¼′ E.; when at anchor in 21 fathoms, on a mud bottom, with the shoal bearing W. by S., distant 1 mile, the West point of Souroutou bore N. 4° 45′ E., (altitude of the highest part of the island 39′ 30″,) East end of Souroutou N. 24° 3′ E., the highest land of Carimata N. 32° 15′ E.; 1 of the Montaran Islands visible from the main top, bore S. 6¼° W., and the shoal is 19¼ miles distant from Souroutou Island. Geo. site.

There may probably be another danger, detached a little way from the Ontario's Shoal, for Lieut. Davidson, of the brig Waller, on his passage from Malacca to Amboina in April,

* Lieut. Ross, made it in lon. 108° 40½′ E. by mean of chronometers from Batavia, and from the North Natuna, corresponding with each other within ½ a mile, which is probably nearest the truth.

1803, saw *two* shoals. The first was probably the Ontario's, which appeared about ½ a cable's length each way, nearly even with the water's edge, steep to, with a small breaker on its centre. The Waller had 24 fathoms soft ground, when passing abreast of the shoal within ¼ mile distance, at 1 P. M. on the 18th of April; when in 1 with the South point of Carimata it bore N. E. ¾ N., the N. Westernmost part of Souroutou then in sight, bearing N. ½ E., distant about 5 leagues. About a mile to the S. Eastward of this shoal, a small breaker was perceived on another shoal, which must either be the southern extremity of the Ontario's Reef, or a rocky patch separated a little way from it: but circumstances prevented Lieut. Davidson from sending a boat to examine them.

Geo. site of Cirencester's Shoal.

CIRENCESTER'S SHOAL, in lat. 2° 54½′ S., lon. 108° 58½′ E., or 2¾ miles West of the Cirencester's Sand Bank, by the chronometers and observations of Lieuts. Ross and Maughan, who examined it on the 14th of May, 1814, with the surveying ships, Discovery, and Investigator, and found it to bear from the easternmost Montaran Island S. 15° E., distant 25 miles: the least depth found on it was 2 fathoms at low water, and there is probably 3½ fathoms on it at high water; close around, the soundings were 17, 16, and 15 fathoms. The shoal is narrow, and not more than 100 yards in length North and South; it was not discovered by the boats sounding for it, until the rocks were seen under the bottom.

This shoal was first seen by Capt. Hâlkett, in the Cirencester, on the 13th of November, 1810, when working to the southward with light S. E. winds, and it was perceived by a strong rippling; the boat was sent to sound the place, and found only 2 fathoms water, part of Billiton, or else 1 of the Montaran Islands being then in sight from the mast head, bearing about N. W. by W.

Geo. site of Cirencester's Sand Bank.

CIRENCESTER'S SAND BANK, in lat. 3° 17′ S., lon. 109° 4′ 54″ E., by an observation of Jupiter's 1st satellite, taken by Lieut. Ross on the bank, and in lon. 109° 1¼′ E. by chronometers, bears from the easternmost Montaran Island S. 11½° E., distant 46¾ miles. It is about ⅓ of a mile in extent N. N. W. and S. S. E., and not above 100 yards in breadth, part of it being a bank of white coral, overflowed in the middle at high tide, which then gives it the appearance of 2 small sandy patches, the largest to the southward. The depth of water increases toward this bank, there being 25 fathoms close off the North end, 32 fathoms off the South point, and 35 fathoms about ¾ of a mile to the westward: with a good look out, it may be seen from the mast head about 8 miles at low water, but probably not above 3 or 4 miles at high tide.

The Cirencester saw this sand bank, on the same day that she discovered the shoal described above, and about 2 miles to the eastward of it, had very irregular soundings from 16 to 20 fathoms, changing almost at every cast of the lead. When Lieut. Ross examined this bank on the 11th of May, 1814, he found 2 spars erected on it, supposed to have been placed there by some persons who had been shipwrecked. The ship, Samdany, on the 16th of June, 1812, passed within 1 mile of the West side of this sand bank, and deepened from 14 to 17 fathoms as it was approached, steering S. W.; this ship made it in lon. 109° 10′ E., and agrees with the Cirencester, and Lieut. Ross, in making its lat. 3° 17′ S.

Geo. site of Discovery's Sand Bank.

DISCOVERY'S EASTERN BANK, in lat. 3° 32′ 40″ S., lon. 109° 9′ 43″ E., or 2° 26½′ East from the South Watcher by chronometers, as measured by Lieut. Ross, in the Company's surveying ship, Discovery, on the 14th of February, 1813, is probably the sand called ENKHUYZER, in Van Keulen's chart; and it might perhaps, have been here, where the Forbes, privateer, and her Dutch prize were wrecked in the night of the 11th of September, 1806, as the officer sent from the Discovery to examine the bank, found a number of broken bottles with the corks in them. This bank extends about ½ a mile North and South, elevated in the centre about 15 or 20 feet above low water mark, with some coarse

grass growing on it, and 2 small trees destitute of leaves, appeared at a distance like 2 black rocks on a white sand. The whole of the bank consists of small white coral, which may easily be mistaken for sand; the Discovery at anchor about ½ a mile to the eastward of it had 20 fathoms water, and about 5 miles to the East of it 25 to 29 fathoms. This danger is no doubt, that formerly called St. Clement's Shoal, but its situation was never ascertained, even within 30 miles of latitude.

DISCOVERY'S WESTERN BANK, in lat. 3° 39′ S., lon. 108° 43′ E., or 1° 59½′ East of the South Watcher by chronometer, was found to be a coral bank, extending North and South about 1 mile, elevated about 15 feet in the centre at low water, but the boat could not land, it being surrounded by a coral reef on which the surf broke very high. About 1 mile to the eastward of this bank, the Discovery anchored in 20 fathoms soft mud, on the 13th of February, 1813, and to the North and westward of it the depths were 16 and 17 fathoms. Geo. site of Discovery's Western Bank.

DISCOVERY'S REEF, in lat. 3° 36½′ S., lon. 108° 48½′ E., distant about 6 miles N. E. by E. from the last mentioned bank, was found not to be 1 mile in extent, with a few rocks above water, and high breakers projecting around them. The Discovery passed about a mile to the southward of this reef in 19 fathoms water, and when it bore North at the distance of 1 mile, the Western Bank was just in sight from the main-top-gallant-yard, bearing W. S. W. Geo. site of Discovery's Reef.

SHOE ISLAND, or PYRAMID, in lat. 3° 47½′ S., lon. 108° 2′ E., or 1° 26½′ East of the South Watcher by the Discovery's chronometers, lies to the South of Billiton, and 14 leagues to the westward of the last mentioned shoals; and the soundings between them, are generally from 13 to 17 fathoms. It may be seen 6 or 7 leagues from a ship's deck in clear weather; and about 1 mile to the southward of it, lies a large white rock,* with soundings of 16 fathoms at a small distance to the S. S. Westward; and the soundings from hence to the North Watcher, are generally from 12 to 16 fathoms. Geo. site of Shoe Island. White Rock.

The shoals described above, which bound the West side of the Carimata Passage, having hitherto been little known, has occasioned the loss of 5 or 6 ships since the Ontario was wrecked, but their positions being now well ascertained, they may be easily avoided; indeed, all ships should give them a wide birth in the night particularly, by borrowing over toward the coast of Borneo, in the East side of the channel. A caution.

BILLITON,† (exclusive of the islands and dangers before mentioned) is fronted on the East side by several groups of small islands, stretching nearly N. N. W. and S. S. E. about 10 or 11 leagues, most of which are surrounded with, or connected by rocks, sands and shoals. There is a large range of these islands, in about lat. 3° 8′ S., through which the Warren Hastings passed, betwixt a long island to the East and a small round 1 to the West, having extensive reefs projecting from them. The soundings were pretty regular in the channel betwixt the reefs, decreasing to 6 and 5½ fathoms on the West side, and increasing to 13 fathoms abreast of the reef that projects from the easternmost island. There are 9 islands to the eastward of this passage, and a greater number on the West side, toward Billiton. Isles and dangers, to the East and S. Eastward of Billiton.

The South end of the island Billiton, is in about lat. 3° 22′ S., to the S. Eastward of which, the southern extremity of the chain of isles and reefs, terminate at the distance of about 9 or 10 leagues from Billiton; consisting mostly of dangerous reefs, with irregular soundings of 10 to 20 fathoms near them. In May, the Warren Hastings found regular

* Shoe Island and its adjoining white rocks, are the Bird Island and White Rock, which were formerly thought to lie much farther to the eastward.

† This is the only island in those seas retained by the British government, all the others dependant on Java, having been restored to the Dutch conformably to the late treaty.

tides off the South part of Billiton, setting nearly East and West from 1½ to 2 miles per hour; she passed between the S. E. end of that island and the reefs in the offing, saw breakers on 1 of them bearing E 1½ mile distant, then in lat. 3° 36′ S. by observation, with Billiton bearing from N. by E. ½ E. to N. by W. distant 5 or 6 leagues. and a small isle in sight from the mast-head to the E. S. Eastward.

Exclusive of the shoals in the offing, examined by Lieut. Ross, there are others nearer to the East coast of Billiton, and in the vicinity of the Montaran Island, also seen by him and other navigators.

Geo. site of Osterly's north shoal.

OSTERLY'S NORTH SHOAL, 1 of these, in lat. 3° 19′ S. lon. 108° 40½′ E., or 18 miles West of Cirencester's Shoal by chronometers, was found to be a coral bank about 1½ or 2 cables lengths in extent, and very narrow, having a small patch of dry coral on its southern part. The Discovery anchored in 11 fathoms soft ground, and had this shoal bearing East 2 miles, when the boat had from 5 to 7 fathoms rocks on another shoal bearing S. 6° W. from the ship about ¼ of a mile, and breakers were seen from the mast-head bearing S. S. E. distant about 4 miles upon a third shoal, under which 18 proas were at anchor, and many eddies were seen around. Extremes of the group of SCHARVOGEL'S ISLANDS then bearing from W. 15 ½° S. to W. 15° N., the nearest island distant about 8 miles, and a high distant hill W. 45° N. lat. observed 3° 19′ 5″ S.

Scharvogel's Islands.

Montaran Islands.

MONTARAN ISLANDS, which bound the Carimata passage to the S. Westward, consist of 3 straggling groups, fronting the N. E. part of Billiton, the N. Westernmost of which, called by some TOEKOEKEMOU, lie nearest to the N. E. point of Billiton, and Toekoekemou,* appears as 2 islands till within 3 leagues of it. This highest of the Montaran Islands, or Toekoekemou, by the observations of Lieut. Ross, is situated in lat. 2° 30¾′ S. lon. 108° 36½′ E., bearing from the West end of Souroutou S. 6° W. distant 48½ miles, and he made it 1° 22½′ E. of the Island St. Barbe by chronometers. It has a high hill on each extreme, and being low in the middle, appears like 2 small islands when viewed at a considerable distance; but it cannot be mistaken when you are 5 or 6 leagues to the northward, as none of the low islands near it are seen at that distance. Close to the North point of this High Saddle Island, lies an islet covered with bushes, and they are united by a reef which extends about 1½ mile to the northward: a reef projects also from the South point of the island about ½ a mile; and a small round island with a white beach, surrounded by a reef, lies about 1 mile to the westward of the High Saddle Island; and S. by E. from it about 3½ miles, there are 3 low islands, with apparently much broken water about them, and a dry sand bank about 2 miles to the westward: there is also a high white sand bank about 4 miles to the S. Eastward of the 3 last mentioned islands.

Geo. site of N. Westernmost, or High Saddle Island.

Contiguous isles and dangers.

About half way between the High Saddle Island and the westernmost island in the next group to the eastward, lies a dangerous reef of rocks, very little above water, which appeared very shoal near the islands: another reef with a small white bank on it, lies about W. by S. from the Eastern Montaran Island, and E. 60° N. from the low flat island of the middle group. All this part seems dangerous near to these islands, and a ship should not borrow nearer than to bring the High Saddle Island W. ½ S., or she may get into shoal water. The southernmost group of these islands, is in about lat. 2° 35′ S., and when approached in September 1809, by the Fox frigate, it appeared to be inhabited, and the water very shoal around,† for the Malays were observed pushing a boat with poles, although 3 miles off the islands; other boats were also seen, with people upon the shore.

Southern group.

* This is the highest of the Montaran Islands, appearing like a saddle, when first seen.

† It appears to have been upon 1 of the reefs off these islands, that the Abercrombie was lost on the 26th of July, 1812, a fine ship of 1200 tons burthen, belonging to Bombay, on her 1st. voyage to China. She was steering N. W. by N. in the night (very imprudently) among the dangers that lie off the East coast of Billiton,

EASTERNMOST MONTARAN ISLAND, in lat. 2° 30¾′ S. lon. 108° 51¾′ E. by the observations and chronometers of Lieut. Ross, in the Discovery, and bearing from the West end of Souroutou S. 13° E., distant 50 miles, is about ⅓ of a mile in extent North and South, and surrounded with a high sandy beach, as is likewise the next adjoining small island. An officer from the Discovery landed on the easternmost island, where he observed the latitude, and took the following bearings. Carimata from N. 2½° E. to N. 5° E., the peak N. 3¼° E.; a sand bank S. 64½° E., which is about 3 or 4 miles distant from the island; the small and nearest island S. 25¼° W.; the 2 hills on the High Saddle Island W. 1½° S., and W. 4½° S.; extremes of the easternmost island of next group from S. 39½° W. to S. 42° W.; and 2 distant hills S. 63½° W., and S. 65½° W. supposed to be on Billiton. The above bearing of Carimata Peak, makes the easternmost Montaran Island 3¼ miles West of that peak, or in lon. 108° 51¼′ E., corresponding very nearly with the chronometers.

Geo. site of the easternmost Montarau Island.

Betwixt 2 of the groups of the Montaran Islands, the Warren Hastings, of Calcutta, found a safe passage in 1789, and had soundings from 17 to 26 fathoms: when the extremes of the islands bore from E. ½ N. to S. W. by W., distant from the nearest 4 or 5 miles, a long reef of sand and breakers bore from N. W. to W. S. W. about ¾ of a mile, near to which she had anchored in 7 fathoms in the night.

A passage between 2 of the groups.

CURRENTS, in the Carimata Passage, appear to set mostly to the southward in the northerly monsoon, for many ships have found it almost impracticable to beat to the northward in that season; and these southerly currents, also prevail to the westward of Billiton. The Grenville, was nearly 6 weeks in February and March, 1815, getting through Gaspar Straits to the northward, and Lieut. Ross, of the Discovery, found a constant southerly current in the Carimata Passage, in 1813; on the 15th of February he was off Pulo Mancap, and from hence continued beating along the West coast of Borneo, and afterward on the South and West sides of Carimata and its adjacent islands, until the 16th of March, when he got round the West end of Souroutou.

Currents or tides in the Carimata passage.

In the southerly monsoon, it does not appear to be so difficult to get to the southward, for there are regular tides along the West coast of Borneo, and also off the East coast of Billiton in this season, which seem to extend in some degree across the Carimata Passage, the flood apparently setting 12 hours to the N. Westward, and the ebb about 12 hours in the opposite direction; the rise of tide about 9 or 10 feet on the ground, at full and change of the moon, as experienced by Lieut. Ross, in May, 1814.

The snow Luconia, left Mampava on the 14th of May, 1776, passed to the West of Souroutou, anchoring when the current or tide was unfavourable, the wind generally from South to S. E.: on the 6th of June, she passed a shoal above water, in about lat. 3° 25′ S. bearing East 3 miles, then in 21 fathoms fine sand, (probably the Discovery's eastern bank,) and on the 9th of June, she arrived at Batavia.

If coming from the N. W. toward the Carimata Passage, and having approached Souroutou, pass the latter at the distance of 5 or 6 leagues, if you intend to pass outside of the Ontario's Shoal. Having brought Souroutou to bear N. E., steer S. E. by S. and S. S. E., to give a birth to the Ontario's Shoal; and keep the West end of Souroutou to the East of N. ¾ E., until past it, or 8½ leagues to the South of Souroutou; or sink the West end of this island from the deck of a large ship bearing about N. by E.; continuing this course, you will see the Montaran Islands if the weather is favourable, pass to the eastward of them at 5 or 6 leagues distance. From this situation, a S. E. by S. course continued will lead in the fair track, betwixt the Cirencester's and Discovery's shoals on the West side of the channel,

Directions for sailing through it.

although the land was seen bearing N. W. at 3 A. M. and at 5 A. M. she struck on a reef, with rocks dry on it, extending about 1 mile to the N. Westward, which the journal states to be in lat. 2° 29′ S., the centre of Billiton bearing S. W. by S.

and those shoals on the East side which extend S. S. W. from Pulo Mancap: you ought not in this track, to borrow under 15½ or 16 fathoms toward the Mancap Shoals, nor deepen above 20 fathoms toward the dangers on the West side of the channel, although the soundings are irregular, and not a sufficient guide in some parts of the passage. If not certain of the longitude, the best guide is to borrow toward the coast of Borneo, so as to get a sight of the land, if circumstances admit, and after passing Rendezvous Island, haul out to the S. Westward to avoid Mancap Shoals.

Directions for passing inside of the Ontario's shoal, and past Mancap shoal;

But the best track for ships bound to the southward, particularly in cloudy weather, is to pass inside of the Ontario's shoal, by keeping within 3 or 4 leagues of Souroutou, until its western extremity is brought to bear N. ¼ W. or N. ½ W.; then observing to keep it to the westward of N. ¼ W., in steering to the S. S. Eastward, until you have passed the shoal. In proceeding to the southward, borrow toward the eastern side of the passage, where the soundings will generally be from 17 to 14 fathoms within from 10 to 7 leagues of the coast of Borneo, deepening in some places as you approach the shoals on the West side of the passage, but not always a certain guide; and when to the southward of Rendezvous Island, the depths will increase to 19, 20, or 21 fathoms irregular soundings, when about 10 or 11 leagues to the S. Westward of Pulo Mancap, which is as near as any large ship ought to approach the shoals, that extend far out from it in this direction, already described above.

and from thence to the straits East of Java.

Having got into about lat. 3° 50′ S., in soundings not less than 19 or 20 fathoms, a S. E. course may be steered to pass to the westward of Lubec, if bound through any of the straits East of Java; as the wind prevailing sometimes at W. S. W., renders it necessary to approach the coast of Madura, to be enabled to round its eastern extremity, and proceed to the southward betwixt the Islands Pondy and Galion. When through this passage, either of the adjacent straits may be chosen: Bally Strait being narrow at the northern part, and destitute of safe anchorage, is seldom used. Although Lombock Strait is wider, the current runs generally strong through it to the northward, making the passage by it, sometimes tedious and difficult. The Brunswick, Minerva, and Chesterfield, were from the 15th of January, 1794, to the 30th, beating in this strait, and drifted about by the currents, before they cleared Banditti Island; their people were also fatigued, and their sails beat to pieces by the squally weather. The Bellona in company, not sailing so well as those ships, could not get through; she therefore, bore away, passed round the North end of Lombock, and without any difficulty, proceeded to the southward through Allass Strait. This strait, should be chosen by ships in the N. W. monsoon, which have proceeded through the Carimata Passage, and are bound out into the open sea by any of the straits near the East end of Java.

To sail from Mancap Shoals toward the strait of Macassar.

When bound toward the strait of Macassar, and being in about lat. 3° 50′ S., clear to the southward of the extremity of Mancap Shoals, an E. by S. course will lead you along the South coast of Borneo, at a moderate distance from it, in soundings of 18 or 19, to 25 fathoms; do not approach it under these depths, until soundings of 12, 14, or 15 fathoms are got on the bank off Point Salatan.

South coast of Borneo.

This point bears E. ½ S. from the southern extremity of Mancap Shoals, distant 92 leagues, and nearly mid-way between them, lies Flat Point in lat. 3° 31′ S., which with most parts of the coast, may be occasionally approached to 8 or 10 fathoms in working. This coast is indented by several bays, fronted in most places by a bank of sand; particularly the great bay to the westward of Point Salatan, is occupied by a shoal bank, which stretches more than 20 leagues about W. ½ N. from that point; and some of the shoal patches with 3 or 4 fathoms water on them, are 11 or 12 leagues off the coast. One patch in lat. 4° 0′ S., is partly dry, with 16 fathoms near it, and the land of Borneo is just visible from it bearing N. E. ¼ N. Close to Point Salatan, on the West side, there is a channel of 12 and 10 fathoms water, decreasing gradually to 2 fathoms at the entrance of Benjar River, formerly a place of considerable trade, which was carried on with Benjar Masseen Town, situated 7 or 8 leagues inside of the bar of the river.

# *EASTERN PASSAGE TO CHINA, THROUGH THE STRAIT of MACASSAR.*

## DIRECTIONS FOR APPROACHING IT FROM SOUTHWARD, AND TO SAIL FROM BATAVIA THROUGH THE STRAIT: ADJACENT HEADLANDS, ISLANDS, AND DANGERS.

SHIPS proceeding from Europe, or from Hindoostan, toward China by the eastern passage, frequently adopt the route through the strait of Macassar. Directions for the former to approach the straits East of Java, are given in the First Volume of this work; under the head of "Sailing Directions from St. Paul toward the N. W. Cape of New Holland, &c." and also in the following section; and for the latter, in this Volume, directions will be found at the beginning of the section, entitled "Sailing Directions to, and from the Strait of Sunda, &c." General remarks relative to the route by the Strait of Macassar.

Although some ships have made quick passages to the northward, through the Strait of Macassar, others have been embarrassed, and greatly delayed by the adverse winds and currents. The route, by the Pitt's Passage, and through the Gillolo Passage, or Dampier's Strait, into the Pacific Ocean, may be considered *more certain*, particularly after the middle of November, when the N. W. monsoon prevails South of the equator. In part of December, January, and February, the latter route is certainly preferable, for adverse winds, and strong currents setting constantly southward through the Strait of Macassar *in the 2 latter months*, ought to deter every ship from entering it, when bound to the northward. Strong southerly currents from December to March.

In the Anna, we rounded Pulo Laut on the 16th of January, 1793, and did not reach Cape Donda until the 5th of March; the wind being constantly from northward, with strong southerly currents, we were 40 days gaining the distance of about 116 leagues. An American ship in the strait at the same time, bound to Manilla, considering the passage impracticable, returned to Batavia.

The Canada, bound from Madras to Macao with despatches, reached Cape Donda in February, 1792; after beating 3 weeks, and gaining no ground, she stood to the northward with a N. Easterly wind, passed through a narrow channel in 5½ to 7 fathoms mud, betwixt 2 of the islands on the East side of Sooloo, then through the Mindora sea, between the Calamianes and Apo Bank, and along the West coast of Luconia, having made a quick passage from Cape Donda to Macao.

The Laurel, from Bengal, bound to Macao, passed Pulo Laut on the 2d of March, 1788, went along the Celebes side of the strait, and reached Cape Donda on the 22d, having experienced strong southerly currents about the equator. She left Cape Rivers on the 24th of March, passed between Baseelan and Mindanao, then through the Mindora sea, and did not reach Goat Island until the 17th of April.

The Hindostan and Abergavenny, were 4 weeks from Carimata to Cape Donda, which they passed on the 16th of December, 1799.

OCTOBER AND NOVEMBER, are considered proper months for the passage through Macassar Strait. Quick passages have been made through the Strait in October and November.

The Arniston having cleared Lombock Strait, on the 1st of November, 1797, passed to the eastward of Hastings Island, Little and Great Pulo Laut; from the latter, she stood over to the eastward for the Celebes side of Macassar Strait, where she got a southerly wind on the 9th, passed Cape Donda on the 11th, had constant easterly currents till the 21st, then in lat. 6° 18′ N., lon. 135° 50′ E., and made a very quick passage to Macao. She left

the Cape of Good Hope on the 26th of September, and passed through Lombock Strait on the 31st of October with a fair wind.*

The Dublin and fleet, in October, 1798, were only a few days passing through Macassar Strait. The Contractor and part of the fleet, which had separated, passed Pulo Laut on the 14th of October, and cleared Cape Donda on the 19th.

Notwithstanding speedy passages have been made through the strait of Macassar in October and November, and are generally expected in these months, the contrary sometimes has been experienced, particularly by the Woodford. This ship was off Pulo Laut on the 13th of October, 1803, and proceeded along the Borneo side of the strait, experienced light airs and calms, with a current setting 1½ mile per hour to the southward, which obliged her to anchor frequently in lat. 2° S. to 1° S. Having reached Cape Donda, on the 9th of November, in lat. 0° 47′ N., she was carried back by the currents to lat. 1° 0′ S., where she anchored on the 16th in 9½ fathoms mud, about 3 leagues off the Borneo shore. On the 19th, she anchored in 6½ fathoms, with the S. E. point of Pamaroong Island E. N. E., and the opening betwixt it and the main, or entrance of Gooty River N. N. E., distant 6 or 7 miles: the 2 cutters were sent to Gooty for rice, but could find no such place.† From hence, she proceeded to Passier, anchored there on the 22d, and got 133 bags of rice, some sago, and fruit; she sailed again on the 30th, found the southerly current still prevailing, which prevented her reaching Cape Rivers until the 24th of December; so that this ship was 2 months and 3 days getting through the Strait of Macassar, excluding 7 days she remained at Passier. Had she been on the Celebes side, probably the current would have been weaker, particularly near the shore; but the difficulty experienced by the Woodford, shews that the passage to the northward through the Strait of Macassar, is sometimes precarious, even in the favorable season.

The contrary sometimes happens.

The Royal George, and David Scott, left Malacca on the 26th of October, 1812, proceeded through the Carimata Passage, and having experienced light S. Easterly winds, did not reach the Dwaalder Island till the 26th of November. From hence, they had northerly winds and a southerly current, which obliged them to anchor frequently, and they did not reach Pamaroong Island till the 8th of December; here a strong southerly wind fortunately commenced, which carried them to Siao in 50 hours: but from the adverse winds and currents experienced by these ships, so early as November and the beginning of December, Captain Gribble of the Royal George, considers the route to China by the Strait of Macassar, at all times precarious. They passed to the eastward of the Philippine Islands, and reached Macao Road on the 10th of January, 1813: had they adopted the Palawan Passage after leaving the Strait of Malacca, they would probably have arrived 6 weeks sooner in Macao Road.

To approach the Strait of Macassar, when coming from the southward.

SHIPS bound toward the Strait of MACASSAR, which have come through Bally Strait, in September, or October, should proceed to the northward between Pondy and Galion; then giving a birth to the western extremity of the Kalkoon Isles and Shoals, they may steer to pass on either side of Little Pulo Laut, as the winds may render advisable.

* The Coutts and Cirencester, left Sapy Strait on the 27th of October, the same year, proceeded by Salayer Straits and the Pitt's Passage, where the winds were variable, sometimes easterly, being too early in the season. They got clear of Dampier's Strait on the 17th of November, made the Bashee Islands on the 6th of December, and reached Canton River about 8 days after the Arniston.

† Gooty, or Koote River's entrance, is a little to the southward of the above-mentioned Island, but the town is situated far up the river. Capt. Robert Scott, in 1797, had his vessel cut off by the Manilla Helmsmen, (who were part of the crew) while at anchor off the entrance of Gooty River, and the European officers were killed by them. The Commander being at the town when these pirates carried away the vessel, he was forced to remain at Gooty until the change of the monsoon, where he was treated with hospitality, being known to the chief of that place, and he afterward arrived safe at Malacca in 1 of the trading Proas.

Those from Lombock Strait, should steer N. N. Eastward, to pass betwixt the westernmost Pater-Nosters and Hastings Island, or just in sight of the latter; then to the northward, for the Two Brothers, and Great Pulo Laut.

Ships from Allass Strait, may steer N. N. W. and northward to make Hastings Island, and pass to the eastward of it, as in the case last mentioned.

Ships which come through Sapy Strait in the same months, may pass either to the eastward or westward of the Postillions, as winds or other circumstances require; then proceed to the northward betwixt Tanakeka and the Tonyn Islands, giving a birth afterward to the Spermonde Archipelago of Isles and Shoals, which stretch N. Westward from the bay of Macassar; but in this track, great caution is indispensable, on account of the dangers around.

When to sail from Hindoostan, and tracks to be pursued by ships bound to China by the Eastern Passage.

SHIPS from HINDOOSTAN bound to China by the Eastern Passage, ought if possible, to sail in October or November, that they may be enabled to reach China in sufficient time, to return down the China sea by the common track.

Those which sail from Hindoostan after November, if to proceed by the Eastern Passage, cannot be expected to arrive at China in sufficient time to return down the China sea with the N. E. monsoon, although some solitary instances to the contrary may *possibly* occur.

Ships from Bengal, bound to China by the Eastern Passage, have the option of proceeding by Malacca Strait and the Carimata Passage, or to the westward of Sumatra, as circumstances require: although the route by Malacca Strait, and the Palawan Passage, then along the West coast of Luconia, seems preferable for ships leaving Bengal during the whole of the N. E. monsoon, as they will probably reach China much sooner by this route than by any of the circuitous Eastern Passages.

Those from the Malabar coast, Ceylon, or the southern parts of the Coromandel coast, may steer to pass on the South side of Java, then through any of the straits to the eastward of it: or in time of peace, the track by Sunda Strait, and to the eastward between Java and Borneo, may be adopted; which is considered equally safe, and more direct than the route to the South of Java, although the winds are steadier outside.* Having entered Sunda Strait, the track by the North Watcher, to the northward of the Thousand Islands, may be pursued; or they may touch at Batavia for a supply of water or provisions, when absolutely necessary.

Cautions in steering eastward through the Java Sea.

SHIPS PROCEEDING TO THE EASTWARD, betwixt JAVA and BORNEO, ought to be guarded against *sudden* severe squalls, which frequently blow furiously during the strength of the N. W. monsoon; particularly in December and January, when the weather is generally cloudy, with much rain. Leaving the Island Edam in these months, steer about E. N. E. 40 leagues, if observations are not obtained, to be certain of passing to the northward of the reef that lies off Bumkin's Island, and also to pass clear of Carimon Java; for in this season, the current sets sometimes to the E. S. Eastward, as far as Lubeck, or to the Solombos; then about E. N. E., toward the entrance of the strait of Macassar. From Edam, the Island Moresses bears E. 10° N., distant about 184 leagues; steering E. N. E. from the former, the depth increases to 28 or 30 fathoms at the distance of 40 leagues. From hence, steering between E. by N. and East, depths from 30 to 34 fathoms will be found, until within 40 or 45 leagues of Tanjong Salatan; steering on about E. $\frac{1}{2}$ N., the depth of water will gradually decrease to 14 or 15 fathoms when Tanjong Salatan is abreast about 7

To sail from Edam toward the Strait of Macassar.

* Ships from the Malabar coast, or western parts of India, ought not to attempt the passage through Malacca Strait. The Anna left Bombay on the 22d of October, 1806, proceeded by Malacca Strait, and the Carimata Passage; and on the 7th of January in the Pitt's Passage, she fell in with the ship Alexander, which came through Allass Strait, having left Bombay on the 21st of November, or 30 days after the Anna.

leagues distance. Care must be taken to avoid the Arrogant's Shoal, situated in lat. 5° 12′ S., about 14 leagues to the northward of Lubeck.

Geo. site of Tanjong Salatan; the adjoining coast.

TANJONG SALATAN, in lat. 4° 10′ S., lon. 114° 42′ E., by stars on each side of the moon, or 26 leagues to the westward of Moresses, is the southernmost point of Borneo, and the high land over it called Goonong Ratoos, or Hundred Mountains, appears like islands when seen 10 or 12 leagues off; this high land forms a ridge of peaked hills stretching East toward Pulo Laut, but close to the sea, the coast is low and woody.

Depth to preserve in passing it.

The coast hereabout may be approached to 9 or 10 fathoms, but 14 fathoms is a good depth to preserve in passing Tanjong Salatan, and from thence eastward to Moresses, it may be approached to 7 or 8 fathoms: the former ought not to be passed at a greater distance than 8, or at most 10 leagues, for the Island Arentes on the South side of the passage, is situated farther westward than generally represented; and to the westward of this island there is a rocky spot, on which an American ship struck in January, 1794, according to the account of the pilot of that ship, which we fell in with a few days after, in the strait of Macassar: they had 18 fathoms just before and after striking, and 1 cast of 5 fathoms immediately after the shock; the track of 18 fathoms, ought therefore, to be avoided.

Little Pulo Laut Group.

LITTLE PULO LAUT,* or LAUROT ISLANDS, are mostly high, and form a group stretching nearly from lat. 4° 43′ S., to 5° 0′ S. Within ½ a mile of the southernmost, there is 16 fathoms water, but the shore is rocky. The Laurel anchored in 20 fathoms, on the N. W. side of the northernmost island, about a mile off shore, where she remained 2 days and filled up her water. It was procured at some deep holes or wells, which received a stream of water, situated under a shade of trees at the foot of the mountain: as the long boat was prevented by rocks from getting nearer than 20 yards of the beach, the people were obliged to carry the water to her in buckets; firewood was got close to the beach. Some breakers project a little way from the N. E. end of this island.

Geo: site of Moresses; isles and contiguous channels.

MORESSES, or MANEVASA, in lat. 4° 25′ S., lon. 116° 3′ E. by lunar observations, situated about 8 leagues to the N. N. Eastward of the northernmost Little Pulo Laut, forms like a pyramid in a regular peak at the summit; and it is the largest of a group of 3 small islands, having 3 or 4 islets or rocks above water contiguous to them. They lie near each other, the large island in the centre, which ought not to be approached nearer than 3 miles in the night, for the outermost islet or rock is about 1½ mile to the southward of the large island, and is on with the body of it bearing N. N. W. ½ W. The channels on either side of Moresses are safe, with regular soundings in the northern 1, of 14 and 15 fathoms water: the southern channel, betwixt it and Little Pulo Laut Islands, is 6 or 7 leagues wide, and more frequented than the other, with soundings of 18 fathoms in mid-channel. When passing through with a N. W. wind, it is proper to borrow on the North side, toward Moresses.

Geo. site of Dwaalder Island.

DWAALDER ISLAND, in lat. 4° 12′ S., lon. 116° 21′ E., bearing N. 54° E., distant 7½ leagues from Moresses, is woody, small and low; being higher at the East and West ends than in the middle, it appears in the form of a saddle, when viewed from the southward; and from its eastern part, a reef projects out about the length of the island. The passage to the northward of the Dwaalder is safe, with soundings of 13 to 15 fathoms; but the southern channel between it and the Two Brothers is generally used, being about 4½ or 5 leagues wide, with soundings of 15 and 16 fathoms in mid-channel, and 13 or 14 fathoms near the Dwaalder.

Royal George Shoal.

ROYAL GEORGE SHOAL, in lat. 4° 17½′ S., was examined by Capt. Gribble, with

* i. e. Sea Islands.

All the space between Lankeet and Ty-cock-tow is very shoal, having in many places only 1 fathom at low water.

Sampan-chow.

SAMPAN-CHOW, or BOAT ISLET, situated about $1\frac{5}{4}$ mile to the N. N. E. of Lankeet Hill, is small, of middling height, resembling a boat turned bottom upward: there is an extensive rocky bank projecting N. W. from it, partly above water, and joined to the shoal bank that extends from Lankeet to Ty-cock-tow. Close to Sampan-chow, on the East side, there is 9 fathoms water. This islet is the best guide for crossing over the flat between the northern part of Lintin Sand and Lankeet.

To sail over Lankeet Flat

WHEN SAILING, or working up channel, keeping in $4\frac{1}{2}$ to $5\frac{1}{2}$ fathoms, shortly after the rocks off the East end of Lankeet are perceived on with the middle of the opening of Bocca-tigris, or rather more westerly, Sampan-chow will be seen when within 6 or 7 miles of Lankeet, and will then appear under the land, a little to the eastward of the high round summit of Anung-hoy. This is a high round hill, sloping down to a point on the West side, and forms the eastern boundary of Bocca-tigris. When Sampan-chow bears about N. 21° W., it is on with the middle of Anung-hoy Hill, and this is a *leading mark* through the channel. With a working wind, turn upward with Sampan-chow kept between the eastern shoulder of Anung-hoy Hill and the West point of the same, but that islet must not be opened to the westward of Anung-hoy Point, until you are clear of Lintin Sand; for if it be open with that point, you will get upon the northern extremity of the sand, about $5\frac{1}{2}$ miles from Lankeet. With an easterly wind, to prevent being set by the tide toward Lankeet, keep in the East side of the channel, with Sampan-chow shut in a little to the eastward of Anung-hoy Point, or nearly on with it: when within 4 miles of Lankeet, you may stand well to the eastward in working, opening Sampan-chow considerably to the westward of the point, being then to the northward of the extremity of Lintin Sand; you must not, however, stand so far over as to bring Anung-hoy Point to touch Chuen-pee, but tack before they come on, for farther to the eastward the water is shoal. After opening Sampan-chow with Anung-hoy Point, (which with a westerly wind need not be done until abreast of Lankeet) steer direct for the land of Anung-hoy, giving Sampan-chow a birth to the westward of $\frac{1}{2}$ a mile or more at discretion, in 9 or 8 fathoms; the depths from hence will be 9, 8, and 7 fathoms, to the entrance of Bocca-tigris, increasing inside to 13 and 16 fathoms near the Whang-tong.

and from thence to Bocca-tigris.

If in a small ship, a cast of $3\frac{1}{2}$ or 4 fathoms hard ground is got before Lankeet is seen, in a clear night, you may be certain of it being on Lintin Sand, and will deepen fast in hauling to the westward into the channel. To the eastward of Lintin Sand, there is a channel* frequented by the coasting vessels, but it is not so deep as the western channel.

Chuen pee and the adjacent land.

CHUEN-PEE, in lat. 22° 44 $\frac{1}{4}$′ N. (off which H. M. ships generally anchor) is the southern extremity of the land on the East side of Bocca-tigris, as Anung-hoy is the northernmost land on the same side: Chuen-pee Point, is formed close by a small peak called Chuen-pee Hill, bearing N. N. E. distant $1\frac{3}{4}$ mile from Sampan-chow, having on each side a small sandy beach. Fresh water is got in the bay on the East side near a temple, but ships do not anchor there, the water being shoal on a sandy flat that extends from the point to the East and S. Eastward. The anchorage is in $6\frac{3}{4}$ or 7 fathoms at low water, about $\frac{1}{3}$ of a mile off the beach on the North side of the point; and the tide flows here till near 2 hours on the full and change of the moon, and rises 7 to $8\frac{1}{2}$ feet. On the N. W. part of Chuen-pee, there is a small Watch-turret, with a fort under it on the North side; between these and the South point,

* The Anna (drawing 21 feet water,) by mistake, got to the eastward of the South end of Lintin Sand, and proceeded to the northward on the East side of it; and with the help of boats sounding ahead, sufficient depth of water was found near the edge of the sand.

several rocks project about ¼ mile from the shore, with 12 fathoms close to the outermost, on which some ships have grounded by borrowing too close. Anson's Bay, on the same side, formed between the North point of Chuen-pee and Anung-hoy, is very shoal; from 6 fathoms, the depth decreases suddenly to 2 fathoms within a line joining the points, affording only a harbour for boats.

Ty-cock-tow. TY-COCK-TOW, the point of land on the West side of Bocca-tigris, has 7 fathoms near it, which is a smooth anchorage when westerly and S. W. winds prevail, and preferable at such times to the anchorage off Chuen-pee. From Ty-cock-tow to Sampan-chow the West side of the channel is lined by a shoal flat, on which boats only, can pass to Ou-chow, the 2 small isles adjacent.

Wang-tong, and description of Bocca-tigris. WANG-TONG, is a small island with some trees and a fort on it, situated nearly in the middle of Bocca-tigris, betwixt which and the opposite fort on Anung-hoy, is the narrow pass, contracted by a rock above water at a small distance from the Wang-tong. Close to this rock there is deep water, from 18 to 22 fathoms, and although the passage between it and Anung-hoy Fort is too narrow for working a large ship, she can always *back and fill* through with the tide, when the wind is light or contrary.

By attending to the foregoing directions, a ship may be navigated with safety to Bocca-tigris without a pilot; having entered it, the fair channel is in a direct line betwixt Anung-hoy Point and the Wang-tong, but as no ships are permitted to pass, until the Chop and Macao pilots are examined, the best situation to anchor, is in 7 or 8 fathoms abreast of, or a little above the fort and turret on Chuen-pee.

Canton River CANTON RIVER, named by the Chinese CHOO-KEANG,* formed at the entrance by 2 high points of land, the western 1 named Ty-cock-tow, and the eastern 1 Anung-hoy, (or Namshan by the Pilots,) but owing to 2 small Islands named Wang-tongs, situated between these points, there are 2 channels formed; the eastern 1 of which, is used by European Shipping, named Hoo-mun or Hoo-tow-mun† (the Tiger's head Entrance) and Foo-mun by the Pilots.

The Chinese have a redoubt and a fort on the eastern side; and 2 forts on the northern-most Wang-tong, which forms the West side of the Channel. On the South side of the Island, there is an office belonging to the Hoppoo, or Collector of Customs, where the pilots must, whether going up or down, produce the chops for allowing the Ships to pass: and lately, a squadron of their war boats have been stationed about Chuen-pee: to these, must the pilots, also, produce the chops, otherwise they will at times fire at the ships, and certainly punish the pilots most severely. It will therefore, prevent detention and insults, (which the Chinese are very ready to offer, when it can be done with impunity) by allowing your pilot boat to precede you, and make his report.

When entering the river, ships turning through, as they near the South Wang-tong, must be careful of the shoal flat, that extends 1¼ mile to the S. E. of the island, having only 1½ fathom water in some places: therefore, do not stand so far to the westward, as to bring the eastern extreme of Tiger Island so near as to touch the eastern part of the fort on the North Wang-tong, but tack before they come on.

The passage is between a Dry Rock and the high land of Anung-hoy, and is only ½ a mile wide, with deep water, and an uneven bottom. The tide runs strong through in eddies, and ships generally keep nearest the eastern shore in passing.

* The Chinese names were obtained from the Reverend Robert Morrison, at Canton, by Lieutenant Ross; from whose Survey of the River to the 2d. Bar, the following Remarks have been communicated.

† Or Hoo-tow-moon, called Bocca-tigris by Europeans, first applied by the Portuguese to this pass.

To the westward of the Wang-tongs 1¾ mile, there is a very remarkable, and high island, the summit of which appears cleft, named by the Chinese Ty-foo, and by Europeans, Tiger Island. About half way between the South point of this island, and the North Wang-tong, there is a DANGEROUS POINTED ROCK having only 16 feet water on it at low spring tide. You will avoid this rock, by not bringing Sampan-chow to touch the East end of the North Wang-tong, until you have approached Tiger Island so near as not to see the high land of Geefoo to the westward of it. At anchor in a boat over the rock, the small round hummock on the western part of the South Wang-tong, was seen over the Western slope of the North Wang-tong, between the small redoubt with a tree in it, and the point: and the high land of Geefoo, was just touching the western brow of Tiger Island. The soundings round the rock are 7 and 8 fathoms. Dangerous Rock.

About ⅓ of a mile to the eastward of the highest part of Tiger Island, there is a projecting point of the Tawling-saa sand, and when in 4 fathoms on the edge of it, the Watch Tower, which stands on a hill at Chuen-pee, was exactly over the point of Anung-hoy, or eastern side of the river's entrance. Ships when turning up toward Tiger Island, may stand to the eastward and shut in the high land of Chuen-pee with Anung-hoy Point; but when they arrive at the South point of Tiger Island, must attend to the mark for the edge of the sand. Large ships when passing the narrow part, with a contrary wind, generally back and fill through, as the tides are strong hereabout. Tawling-saa Sand.

After passing Tiger Island, (with a fair wind) no better mark appears, than to keep the tower on Chuen-pee open until you bring Ty-cock-tow Point, (which is the 1 seen next to the westward of the Wang-tongs) on with the eastern side of Tiger Island, then steer up the river with them on; they will lead you up in the deepest part of the channel, but nearest to the Tawling-saa sand, in 8 or 9 fathoms water. This mark will not answer much farther, than to bring the remarkable high part of Geefoo on with the highest land to the westward, or bearing about S. W., when you should steer more to the right and open the point again; so that before you arrive abreast of the low western shore, you will bring a hummock on Ty-cock-tow, clear of the highest part of Tiger Island, and over the part marked B, in the chart* of the river: this mark will carry you in a good and deep channel, clear of the Knowls, up to the fishing stakes situated near the western shore, and abreast of the spot called SMALL BAR. Directions. Small Bar.

If your ship is not drawing above 20 feet water, when you have arrived abreast of the fishing stakes, steer a little more to the right, and bring the *mark hummock* between where it is in the view, and the part marked A; these marks will carry you between the North end of the Small Bar, and a hard knowl to the N. W. of it, having only 3¼ fathoms over it at low spring tides. You may steer up with this mark until abreast of a small creek on the eastern shore, bearing about N. N. E. from the fishing stakes; when you may keep in a good depth, about ¼ of a mile off that shore until you approach the South point of the second bar creek, where the channel again narrows to about ¼ of a mile. Directions.

The Small Bar, is a patch of very hard ground about the middle of the river, below the part where the Company's ships remain to complete their cargoes. When the *mark hummock* on Ty-cock-tow is on with the first or eastern notch of Tiger Island, marked in the view A, and the fishing stakes on the western shore are all seen end-on, there is but 2 fathoms water on the shoalest part of the Small Bar. You will likewise discover the large Tree, marked on the Chart, by its being also in a line with the fishing stakes, when they are end-on toward you.

The pilots always use the channel between the Small Bar and the western shore, and when about moving down an Indiaman with a fair wind, will weigh the anchor after she has tended to the flood tide, as by that time, the water will have risen 2 or 3 feet on the knowls. They

* Engraved from Lieut. Ross' survey of the river, from Bocca-tigris to the Second Bar.

also take the precaution of sending boats to lie in the fair channel, or on the 3¼ fathoms knowl, which is to the N. W. of the Small Bar. When they first weigh, and are steering to the southward, they have the *mark hummock* on Ty-cock-tow over the gap A, on Tiger Island, and keep it so, until they are passing the northern point of the small creek, which is below the shipping, when they begin to bring the *mark* toward the highest part of Tiger Island; so that by the time they are drawing near the stakes, they will have it over the part B. In this run, they will not have more than 4½ or 5 fathoms on the first of the flood, when passing between the bar and the knowl, but between the bar and the stakes, 5 and 6 fathoms water. With the *mark hummock* over B, a ship may steer down for Tiger Island, keeping the marks on, until she arrive so far down as to have the hill of Sawshee on the eastern shore bearing about N. E. or N. E. by E., when she should haul a little more to the westward, and shut in the *mark hummock* behind the highest part of Tiger Island; then she may steer directly for the island, remembering that after this, the *mark hummock* must not be opened out to the eastward; or need she go further to the westward than to bring Ty-cock-tow Point on with the East end of Tiger Island; the depths during this course will vary from 6 to 9 fathoms. With the *mark hummock* as in the view, and Sawshee Hill bearing about N. N. E. ½ E. leads on the edge of the Tawling-saa Sand, 1½ mile above Tiger Island. A ship steering as before directed, when approaching Tiger Island, will open out the tower on Chuen-pee, and she must not pass so far off Tiger Island as to have the Tower touching Anung-hoy, but keep it well open; and when going below Tiger Island (that she may avoid the 16 feet rock) do not shut in the East end of Geefoo behind Tiger Island, until Sampan-chow is seen to the eastward of, or to the left of the North Wang-tong, or until the hummock on the South Wang-tong is shut in behind the West Tower of the North Wang-tong; after which, steer for the entrance of the river. After having sounded well in the channel between the eastern shore and the Small Bar, it seems to be the safest for large ships to use when coming down without a pilot, as all that is requisite, is to send a boat to lie on the eastern part of the Small Bar in 4 fathoms, and let the ship pass between her and the eastern shore.

Channel East of Small Bar.

Directions for sailing outward.

When a ship intends coming down the eastern channel, she must weigh on the flood, and pass the northern point of the small creek at a cable's length distance, or in 4½ fathoms, and as soon as she is below the point, haul over on the eastern shore, to bring the *mark hummock* on Ty-cock-tow over the eastern end of Tiger Island, marked C in the large view, or as it is represented in the smaller view. The water is deepest about a cable's length off the eastern mud bank; and she may steer with those marks on, until she open Sawshee Hill clear to the southward of the point of land (which is the northern 1 of another river leading to the eastward) and may then haul over to the westward, steering toward Geefoo until she bring the hummock on with the part marked B, after which, proceed as before directed toward Tiger Island. When hauling to the westward, observe, that the flood tide do not set you again to the northward, on the South end of the Small Bar.

When the summit of Sawshee Hill bears N. 73° E., and the large pagoda N. 34° W., there is a ***Hard Knowl*** with 3 fathoms water on it at low tide: again, with Sawshee Hill bearing N. 65° E., and the large pagoda N. 33° W., there is another with 3¼ fathoms on it; these are on the western shore, near the entrance of a creek.

With Sawshee Hill bearing S. 67° E., and the hummock on Ty-cock-tow over B, is on the 3¼ fathoms knowl to the N. W. of the Small Bar.

From the middle, or shoal part of the Small Bar, Sawshee Hill bears S. 74¼° E., and the bar is about twelve hundred yards long.

Second Bar Creek.

The channel for ships becomes very narrow abreast of a large creek named HAOU-TUN by the Chinese, and by Europeans, SECOND BAR CREEK; its entrance is on the eastern shore, and bears S. 75½° E. from the large pagoda. About the northern point of this creek, the passage is rendered still narrower, by 3 *small knowls* which are very hard,

Second Bar.

and have not more than 2, or 2¼ fathoms on them at low water spring tides; the 2 lowest

are about 120 yards apart, and bear of each other S. E. ½ E. and N. W. ½ W., and the northern 1 is about 300 yards to the northward of the other 2. Between the last and the sand to the westward, there is a narrow channel for ships not above a hundred yards wide. It is really surprising, how the Chinese pilots manage in general to carry ships of so great a draught of water, and indifferently manned, as Indiamen in general are, without some serious accident happening. They, however, make use of numerous boats to buoy off the channel, and are assisted by many to tow. Ships frequently get aground, and lie in a dangerous state for a tide, and this very often proceeds from 2 or 3 pushing over together, as there is no time to be lost after the water has risen sufficiently for a ship drawing 23 or 24 feet, to pass over.

When on the lower knowl in a boat, the 2 pagodas subtended an angle of 36° 27′, and the small pagoda and summit of Sawshee Hill 113° 42′. On the western 1 of the 2 southern knowls, the 2 pagodas subtended an angle of 37° 16′, and the small pagoda and Sawshee Hill 112° 22′. On the upper 1, the 2 pagodas subtended 37° 47′, and the small pagoda and Sawshee Hill 108° 11′.

The knowls being so close, and the channels so narrow and winding, there is no mark which a large ship could use to pass this part, therefore, the channel must be buoyed off, before she could attempt it.

The pilots will sometimes carry ships between the knowls and the eastern shore,* where the ground is soft in some places, but still they must keep very near the former. From feeling with the lead, the knowls seem to be formed of beds of old oyster shells or coral, not liable to alter, although the edge of the sand which approaches them to the westward, may change its form. The rise of tide here is 7 to 8 feet, high water about 1¾ or 2 hours on full and change of the moon, when the tides are regular; but they appear to be very irregular in their strength and duration, and frequently during the 24 hours, there will be a long flood and ebb tide, whilst the other 2 are short and weak. In the winter, the long tides appear to happen between sun-rising and setting, when the moon has North declination; and in the night, when in South: the rise and fall on the neaps, is sometimes as much as happens on the springs. The variation in 1816, was only ⅓ of a degree easterly at the Second Bar, by the observations of Lieut. Ross; at Chuen-pee Mr. Dawson, of the Royal Navy, made it ½ a degree westerly, by which it appears, there is little or no variation at present in Canton River. Tides.

Boats leaving Chuen-pee, should steer N. W. ½ N. until a little above Tiger Island, keeping near the latter, to avoid the Tawling-saa Sand, then N. by W. to the Second Bar Creek, the whole distance being about 16 miles. If boats are passing between Bocca-tigris and Macao in the night, great care is requisite to avoid the fishing stakes, when the tides run strong, as the crew would be liable to perish, if a boat struck against any of them.

SECOND BAR ANCHORAGE, where the large Europe ships moor, to complete their cargoes when bound outward, is in lat. 22° 56′ N., about 3 or 3½ leagues to the northward of Bocca-tigris. Here, the eastern shore is safe to approach, and the anchorage is about a cable's length off it, between the Bar Creek and another smaller 1 to the southward. Second Bar anchorage.

The Bar begins at the Creek, and directly fronting the North point of it, there are some knowls of hard sand and gravel, having only 10 or 11 feet on them at low water; these form the most dangerous part, the depths in the proper channel upon the bar, being about 3 and 3¼ fathoms. The pilots place always boats upon the knowls on each side of the channel, for ships to pass through between them in the deepest water; but sufficient time should be given these boats to sound with their bamboos, and take their stations properly; for if the Caution requisite in crossing it.

* The pilot procured at Macao, gets a fisherman at Bocca-tigris to act as an assistant, who *in general*, may be trusted more than the former, being better acquainted with the river from thence to Macao. They commonly send their boat to sound with a bamboo on the edges of the shoals, and the person in her, waves his hat to the pilot, if the ship be approaching to any place where there is not a sufficient depth of water.

pilots are not careful, they are liable to ground ships on the Bar.* From the Second Bar, the channel upward, is generally nearest to the eastern shore of the river until the first Bar is approached, where it again becomes contracted, and requires great caution.

First Bar. FIRST BAR, situated more than half way from the Second Bar toward the anchorage of Whampoa, is formed by a shoal patch of sand near the eastern shore, and by a hard bank or reef projecting from the low islands on the opposite side, a little farther to the westward. To avoid the former, a ship ought to keep about mid-channel, and when past it, she must haul over to the eastern shore, to give a birth to the hard bank on the West side.

Brunswick Rock. BRUNSWICK ROCK,† situated a little way above the First Bar, about 1 or 1½ cable's length below the small Chop House on the northern shore, and about ¼ of the river's breadth from this shore, extends N. E. by E. and S. W. by W. about 50 or 60 fathoms, and half this breadth, being formed of irregular patches, with from 10 to 18 feet upon them at low water spring tides. When upon the rock, the Second Bar pagoda bore S. by E ¾ E. Clump of Trees or Chop House S. S. E. ¼ E. Whampoa Pagoda W. ½ N. North West point of Round Island (or Bold Island) S. E. ¼ E. easterly, a large house inland N. ¼ W.; and when this house bears from N. ¼ W. to N. by E. you are in the line of the rock.

The channel through which ships always pass this rock, is narrow, for at the distance of ½ a cable's length S. E. by S. from it, there lies another rock, having only 17 feet on it at low water, and between these is the channel. Close along the North shore, there is deep water within the Brunswick Rock, where *probably* the passage is safe, and nearly as wide as the outside channel between the rocks.

From hence, the shipping are seen at a small distance, moored between Danes Island and Whampoa.

Whampoa anchorage. WHAMPOA ANCHORAGE, in lat. 23° 6½′ N., is formed on the South side by 2 high islands, called Dane's and French Islands; by low overflowed ground to the northward, this being the eastern part of the island on which the town of Whampoa is built, and that part close to the ship, is generally called Bankshall Island. This is a very safe harbour, with a moderate tide and from 5 to 6 fathoms water, soft mud bottom; but there is scarcely room for 2 large ships to moor abreast, which occasions the lower part of the shipping to be moored opposite to the entrance of Junk River, when there are many arrivals. Dane's Island is steep to, except nearly close to the upper low point, there is a rock covered at high water. Bankshall Island is also pretty steep, but a spit projects a little way from its eastern point, where Junk River is separated from the other branch that passes by Whampoa; and they reunite a little way below Canton. The flood runs up at Whampoa, until 2½ hours, on full and change of the moon.

Geo. site of Canton. CANTON FACTORIES, are situated on the North side of the river, fronting the city, and form part of the suburbs; they are distant about 4 leagues to the westward of the anchorage at Whampoa: by mean of a series of observations, I made them in lat. 23° 7′ 10″ N.,

* Running up in the Anna, with a steady breeze and flood tide, in the night, the pilot did not reduce sail sufficient, to give the boats time to station themselves properly on the bar; but they left one of the shoalest spits in the space between them, which they lined on each side for the ship to pass through; consequently, she ran directly against it about high water, and lay aground until the following tide; we had 10½ feet at low water under the bow, 3 fathoms under the quarter, and 4½ fathoms a little outside in the proper channel.

† The Company's Ship Brunswick, got upon this rock in 1798, and after being lightened by taking out the guns, stores, and part of her cargo, was so much injured, as made it necessary to go to Bombay for repair. The Alfred, Princess Amelia, and other ships, have also grounded on it; and the ship Wyndam, of Calcutta, was totally lost upon it in 1815.

lno. 113° 14′ E. of Greenwich, by mean of 5 immersions and 7 emersions of the 1st Satellite of Jupiter, and 29 or 30 miles West of the Grand Ladrone by chronometers.* Here, provisions and refreshments of all kinds, are procured in abundance; and probably in no part of the world, is business transacted with so much ease and regularity as at Canton. On the 1st of September, 1803, the tide rose *on the ground* till 2 hours 40 minutes at Canton, being full moon at 8 hours on that day for Canton time, and the moon was in Perigee on the preceding day. The depth of the river from Whampoa to the city, is only sufficient for vessels of moderate size; but from Whampoa outward, it will admit ships of any description. As no record appears of any ship having been lost in this river, except lately the Wyndam on the Brunswick Rock, notwithstanding the numerous large ships which constantly trade here, it may therefore, *probably* be considered, the safest river in the world for ships of great burthen.

remark relative to the river.

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## *COAST of CHINA to the EASTWARD of the LEMA CHANNEL, with SAILING DIRECTIONS for TA-THONG-MOON PASSAGE, MIR'S BAY, HARLEM'S BAY, and TY-POONG HARBOUR;*

### WITH BRIEF DIRECTIONS FOR SAILING TO AMOY, CHIN-CHEW, AND CHUSAN HARBOURS; AND FROM THENCE TO THE GULF OF PE-CHE-LEE.

NINE PIN ROCK, so named from its form, situated to the N. N. Eastward of the entrance to the Lema Channel, is in lat. 22° 16½′ N., lon. 114° 22′ E., distant 6 miles from Waglan; a short distance to the westward of the rock, there are 2 small, but high islands, named Wo-chow, and about a mile N. W. of the Nine Pin, there is a *small rock*, which at high tide is nearly covered. Between the islands and the shore, Lieut. Ross passed twice, and had not less than 15 fathoms water; once on the outside, and had not less than 16 and 17 fathoms.

Geo. site of Nine Pin Rock.

TAM-TOO ISLAND, is distant about 3¼ miles to the N. by W. of Waglan, and 3½ miles to the westward of the Wo-chows, and its South point makes like a peak, with steep cliffs on its eastern side, which point forms the eastern side of the TA-THONG-MOON PASSAGE; the western side being formed by the East side of Hong-Kong Island, close to which, and about 1¼ mile to the northward of the 2 green islands, lie 2 small rocky islands: between these and the South point of Tam-too there is a rock above water, with 12 fathoms near to it. If you wish to proceed up to the Ta-thong-moon Passage from the eastward, steer to the southward of the Wo-chows, then toward the South point of Tam-too, and round it at about a ¼ mile, or in mid-channel between the rock (that is distant 1¼ mile to the westward) and the point; from hence, steer about N. by W. to pass between a bluff point on the Hong-Kong or Western Shore, and a rock above water, which is situated near to an island on the Eastern Shore, and is distant from the bluff point 1 mile: in this route you will have 9 or 10 fathoms, and perceive a *small opening* or *passage* to the eastward, through which Capt. Alves passed, named by the Chinese, Fotow-moon.

Tathong-moon Passage.

* Lieut. Ross, in his survey, makes the difference of lon. 27′ 13″ between them, placing Canton in lon. 113° 15′ E. and the Grand Ladrone in 113° 43′ E.

If you are merely seeking shelter from a gale, you will find secure anchorage a little to the northward of the bluff point, in a bay or harbour that extends to the northward, where you may anchor in 5 or 6 fathoms. If proceeding toward Canton River, continue your course beyond the bluff point, to a narrow pass that you will perceive about 1½ mile to the N. W.; this narrow channel is named Lyee-moon, and is formed by 2 points, the southern 1 being the N. E. point of Hong-Kong, and the northern 1 probably on the continent; both points are high and steep, and the passage is not quite ½ a mile broad, with 25 fathoms water in mid-channel. It is not a passage to be adopted by large ships, unless with a fair wind, when you would be through in a few minutes, and standing to the westward, will perceive on the South side, the Hong-Kong shore, of very rocky appearance, with several stone-cutters employed on it; and to the north-westward, the land forms a deep bay, in which is situated the town of Cow-loon. Your course is along the Hong-Kong shore, leaving a large white rock (that is above water) to the northward of you; the depth will decrease very fast after getting through the narrows, to 8 or 9 fathoms: do not pass very near to the North point of Hong-Kong, (which is about S. by W. from the white rock) as there are some *sunken rocks* lying about 1½ cable's length off the shore. The depths between the white rock and the point, are from 7 fathoms near the former, increasing to 10 near the latter. You may anchor hereabout, in perfect security against all winds, and no doubt, may procure refreshments from the town of Cow-loon, which appears populous; if bound to the westward, your course becomes more south-westerly, and should proceed in mid-channel between the southern shore and a point of land, which is the western 1 of Cow-loon Bay; do not go nearest to the small woody islet which will be seen on the southern shore, as the water is shoal about it, but keep in mid-channel or nearest to the northern shore (which hereabout has a very red appearance), and the depth will be 7 and 8 fathoms. On the S. W. point of this red looking land, there is a little Joss House, or Temple, and a sandy beach; do not pass the point close, but keep 1½ cable's length off it, as a flat commences near the point, and extends to Wan-chun-chow, which is 2 miles to the N. W.; this is a very remarkable island, being barren, and having a very dark red appearance: to the northward of it, was the place to which the piratical fleets used to resort to refit, and receive their supplies of ammunition and stores, of which they received abundance from Canton and Macao. Your course is still westerly in 6 or 7 fathoms, until nearly between Wan-chun-chow and the Hong-Kong shore, which is high land; when, if in a large ship, you should haul to the northward, to pass about ½ a mile from the western point of Wan-chun-chow, and from thence toward a point of land about 2 miles to the westward. In this route, you will have 6 or 7 fathoms water, and avoid a mud flat with 3¾ fathoms on it at low water, which extends about 1½ mile from the 2 small green islands situated near the N. W. point of Hong-Kong. When these islands are to the S. by E., the depth increases very suddenly to 10 fathoms, and you may then proceed to the southward between Lamma and the islands off the East side of Lantoa, decreasing your depth to 5 fathoms; or you may, with a fair wind, and small ship, go round the North point of Lantoa, through the Cap-sing-moon Passage, and from thence along the northern shore, leaving the Brothers, Saw-chow, and Ton-goo to the southward of you, then between Lintin and Fan-shee-ak rocks, into the channel leading up the river.

Sunken Rocks.

Geo. site of Mir's Bay.

MIR'S BAY, called TY-PO-HOY by the Chinese, the S. E. point is 10 miles to the W. N. W. of the small island, named Single Island by Mr. Dalrymple; and this point is in lat. 22° 27¼′ N., lon. 114° 30′ E. The bay at the entrance, is 5½ miles wide, but a large black rock above water, named Gow-tow-pyah, and some other rocks under water to the S. W. of the former, make the entrance for ships about 3 miles wide between the eastern shore and the black rocks.

In Mir's Bay, a ship will find good anchorage and shelter from all winds, excepting what comes from about S. S. W. to South. The depth without the bay is generally 13 fathoms,

decreasing gradually to 8 or 9 fathoms about 5 miles within the entrance. A ship should keep near the eastern side, and when about 3 miles in, or further, if you wish, anchor in 8 or 9 fathoms, about ½ a mile off the shore. As you pass along the eastern shore, you will perceive a remarkable water course on the high land, and find plenty of good fresh water in the second small bay from the S. E. point. Well within the bay, there is an island of green appearance, (having steep cliffs about its southern part) named Peng-chow; between this island and the northern shore, Lieut. Ross, found 7 fathoms water on a mud bottom, and here would be good anchorage when it blows hard from southward; if you intend to anchor hereabout, keep well off the N. E. point of Peng-chow, as it is rocky for about 1½ cable's length. There are a few small villages in the bay, 1 of which is named Namo, and another Suilo-shaw; from whence numerous boats came off with people to look at the ships: all over the inner part of Mir's Bay, there are many single fishing stakes in 9 and 10 fathoms, and it is high water at 9 hours on full and change of the moon. GOW-TOW-PYAH, is a large black rock above water, situated at the entrance, and about mid-channel between the East and West sides of Mir's Bay; a short distance to the S. W. of the black rock, there are other rocks that dry at low tide, and have generally breakers on them; between these latter rocks and the western shore, there is a channel 1¼ mile wide, having 10 fathoms water in it. From Gow-tow-pyah, toward the Nine Pin Rock, the western shore is generally high, and of a craggy appearance, but apparently free of danger.

Gow-tow-pyah, or Bull Rock's Head Rock.

As the ebb tide runs from Mir's Bay along the western shore, a ship with a S. W. wind, will work down fast by keeping near to it, and going between the Wo-chows and Tam-too, but as soon as she opens the Lema Channel, she will meet the strong and constant set to the eastward. The Antelope was 2 days, in the month of August, 1807, endeavouring to get into the Lema Channel from the eastward, and rounded Wag-lan close each time, but found such a strong and constant set to the eastward, was at length obliged to beat through between Wo-chow and the S. E. point of Hong-Kong.

During the month of August, and part of September, if a ship get to the eastward of the Lemas, she will find it very difficult to proceed along shore to the westward, if the wind is from that quarter; she ought, therefore, either to stand off to the southward again, 2 or 3 days, if near the full or change of the moon, when bad weather may be apprehended; else, anchor in Mir's or Harlem's Bay for an easterly wind, which, in these months, generally happens every few days, close in with the coast.

CHUENG-CHOW, or SINGLE ISLAND, in lat. 22° 25′ N., lon. 114° 40′ 15″ East, is small and high, and the southernmost of 3 islands which front the peninsula that separates Mir's Bay from Ty-poong Harbour. From Chueng-chow, the North end of the Great Lema bears S. 43° 33′ W., distant 28½ miles, Pedra Branco S. 68° 6′ E., distant about 26 miles, and Mendoza's Island N. 56½° E. 11¼ miles; there are 16 and 17 fathoms water to the southward and westward of the island, about 1 mile distant: here, in August and September, was observed a constant set of 1½ and 2 knots per hour to the eastward, particularly when the wind was westerly. About 1½ mile to the northward of Chueng-chow, there is a narrow and barren looking island, extending in a N. E. and S. W. direction about 1¾ mile, and it is the *middle island* of this group. On the northern side of it there are a few fishing huts, and in the channel between it and Chueng-chow there are 16 and 17 fathoms water, but rendered unsafe from a rock having but 2 fathoms on it, distant to the N. N. E. of Chueng-chow, about a large mile. To the northward of Middle Island, and separated from it by a very narrow channel, is situated the largest island of the 3 which form the group, named TOO-NEE-ANG; it is highest near the western end, where stands a small fishing village, and a petty mandarin stationed: off the N. W. end of the island, lie 3 rocky islets, and a bed of rocks covered in high tides, having generally breakers on it; between these rocks and the main, there is a channel a mile in breadth, with 13 and 14 fathoms water in it; the highest

Geo. site of Chueng-chow.

Middle Island.

Toonee-ang Island.

Geo. situ.

part of Toonee-ang is in lat. 22° 28′ 10″ N., lon. 114° 38′ E. About ⅘ds of a mile to the N. E. of Chueng-chow, lies Acoong-chow, a high white rock, with deep water near it, to the South and eastward; and ½ a mile to the northward of it, there is a sunken rock, covered only with 2 fathoms water.

Acoong-chow.

Dangerous Sunken Rocks.

TWO SUNKEN ROCKS, are situated to the N. E. of Toonee-ang Island, and being only visible at low spring tide, are very dangerous, as you have no warning from the soundings when near them, and unless there is a swell, they shew no breakers. From the largest rock, Acoong-chow (or the white rock near Chueng-chow) bore S. 8° 27′ W., distant 5¾ miles; the centre of Chueng-chow S. 11° 24′ W.; the highest part or peak of Toonee-ang Island S. 46° 54′ W.; the gap in the island of Tsincoe N. 81° 24′ E., distant 8⅓ miles; the centre of Mendoza's Island East, and distant from its West end 7⅞ miles; Pyramid Point on Loo-kaup Island N. 33° 3′ W., distant 3½ miles. About ¼ mile to the westward of the large rock, there is a smaller 1, never visible; they have 9 and 10 fathoms water over a muddy bottom, close round them. From Acoong-chow, or White Rock, bearing N. 6° 51′ W., distant 8⅔ miles, and from the small island off the West side of Mendoza's Island, N. 72° 57′ W., distant 10¼ miles, is situated the South point of LOO-KAUP ISLAND, or Pyramid Point,* there being 2 or 3 very remarkable pyramidal rocks on, and near to the point; Loo-kaup Island, is the southern and largest 1 of a group that extends to the northward, into the bay. To the eastward of Loo-kaup there are 2 small islands, and on the western side 4, with some rocks above water; near which there appears no danger but what is visible; close to the South point of Loo-kaup, there are 9 and 10 fathoms water. To the westward of the latter island, there is a safe passage 2 miles in breadth, having 9 and 10 fathoms, leading to Ty-poong Harbour.

Loo-kaup Island.

Rocks and Islands westward of Loo-kaup.

Passage to the westward leading to Ty-poong Harbour.

Ty-poong Harbour.

TY-POONG HARBOUR, named from the small city on its northern shore, is situated in the West side of the bay, about 6 miles to the westward of Loo-kaup; and although rather contracted, it is capable of affording good shelter to small ships, about 1½ mile within the entrance; but beyond that distance it is shoal and only fit for boats.

Directions to sail into it.

If you intend to proceed into Ty-poong harbour, and your ship is near Chueng-chow Island, or Acoong-chow Rock, pass the latter to the eastward, at any distance thought proper, steering to the N. N. W. to pass the East point of Toonee-ang Island; but remember that about ½ a mile North of Acoong-chow, there is a rock with 2 fathoms water on it, and N. ¾ E. 5¾ miles from it (Acoong-chow) there are 2 sunken rocks; therefore, your course must be so directed that when passing the East end of Toonee-ang you may have Acoong-chow to bear South, and do not bring it to the westward of that bearing. The sunken rocks are 2¾ miles to the N. E. of the East point of Toonee-ang, and when you have the summit of Mendoza's Island to the southward of East, you are to the northward of them; continue your course between Loo-kaup Island and the western shore, which is high land, and when between them, you will perceive the western shore trend more to the westward about 4 miles, to a rocky point of land which forms the southern side of the entrance to Ty-poong: between this rocky point and the 1 opposite to Pyramid Point, there are several sandy beaches, and houses on the western shore. Your course is toward the South point of the entrance, carrying from 10, to 8½ and 7 fathoms water; the space between Loo-kaup Island and the western shore is all free of danger, having 7 and 8 fathoms water: you must not round the southern side of the harbour farther off than ¾ of a mile, but as much within that distance as you think proper, there being a reef of rocks extending off the northern shore, opposite to the South point. You will have 5 and 6 fathoms in rounding the point, after which, keep about ½ a mile off the western shore until you have got in about 1½ mile, and arrived abreast of a

* Called Sam-pat-tow, by the Chinese.

bay, with a sandy beach, and a large village a little way in shore. The western extreme of this bay is a high bluff point, from which the land turns more to the southward, and forms the bottom of the harbour; you must not go to the westward of this point, but anchor about ½ a mile to the northward of it, in 4 fathoms sand and mud. The Antelope anchored in 5 fathoms, with Pyramid Point on Loo-kaup bearing E. ½ S. and the city of Ty-poong N. W. distant off the southern shore about ¾ of a mile; she did not communicate with the city, but no doubt, like all other places on the coast, a small present accompanying an application to the mandarin, will insure your procuring refreshments.

In the space between Loo-kaup Island and Ty-poong Harbour, particularly near the latter, there are many single fishing stakes, some of which at high water are not more than 3 feet above the surface, therefore, care should be taken not to run them down: the tide is not strong, but from the numerous little channels and islands, it is very irregular in its course, and rises 6 or 8 feet. In the Bay or *Outer Harbour* of Ty-poong, about 4 miles to the westward of Loo-kaup Island, there is good anchorage in 7 or 8 fathoms mud, where a large ship will be completely sheltered from southerly winds; and it is very little exposed to any winds except those which blow at East or E. S. E., which must force in a considerable swell.

To the N. N. E. of Loo-kaup, at a short distance, and nearly East from Ty-poong Harbour, lies CHUEN-POON-CHOW, a three-peaked remarkable rock; from Ty-poong Harbour you may pass on either side of this rock in 7 and 8 fathoms, if you wish to proceed to the eastward into another bay or harbour. Chuen-poon-chow.

To the northward of Loo-kaup Island, lies LOO-KAUP-SYE,* a small island; and the channel between them is safe, there being no dangers but what are visible: close off the West end of Loo-kaup-sye, there is a small patch of rocks above water, with a large single 1 on it: on the North side of the island, there are fishing huts. Loo-kaup-sye.

MENDOZA'S ISLAND, in lat. 22° 31′ 22″ N. lon. 114° 50′ 45″ E. bearing from Pedro Branco N. 51½° W. distant 19 miles, is high, and steep to, having 12 or 14 fathoms water around, and very close to its West end, there is a small island which cannot be distinguished from the larger, when to the westward of them; Mendoza's Island is not inhabited. About 1 mile to the northward of Mendoza's Island, lies TSINCOE ISLAND, which is small, but very remarkable, from having a gap nearly in the centre; there is no danger near this island, there being 12 fathoms water in the channel between it and Mendoza's Island, and 9 fathoms to the northward. MIDDLE ROCKS, bearing nearly West from the extreme of Fokai Point, are well above water, with deep water round them, and no hidden danger: about 1 mile N. 17° E. from these rocks, and situated near the shore, lies Fisherman's Island, which is small, having a rocky reef between it and the shore. FOKAI POINT, bearing N. 52° E. from Mendoza's Island, distant 2½ miles, is the extremity of a high promontory; the land is high near the point, and from its being connected with the adjoining high land by a low and narrow isthmus, has very much the appearance of an island when viewed from the east or westward. On the first hill from the extreme point, there is a fort named TY-SING, or GREAT STAR; there are several pieces of cannon mounted on it, but like most of the forts on this coast, appears to be in a ruinous state. Geo. site of Mendoza's Island. Tsincoe. Middle Rocks. Fokai Point. Ty-sing Fort.

HARLEM BAY, called PING-HOI by the Chinese, is formed to the westward of the high part of Fokai, and to the North-eastward of Mendoza's and the other small islands; it cannot be considered a safe place for a ship to ride during a ty-foong, when the winds are liable to shift suddenly to different points of the compass, but affords tolerable shelter from a N. E. or Easterly gale. The Antelope riding in 5 fathoms (which is as close as a ship could go), when blowing a gale from East, not only experienced strong gusts of wind from over the Harlem Bay or Ping-hoi.

* Sye, i. e. little.

low isthmus, but such a heavy sea tumbling in round Fokai Point, which acting across the wind, made her roll very deep, and obliged Lieutenant Ross to weigh aad run for another anchorage. He therefore, recommends to navigators when a ty-foong is apprehended, not to seek shelter in Harlem Bay, but proceed about 9 or 10 miles more westerly, to a large and safe harbour (situated in the place assigned to Bias Bay) which will be described hereafter.

If you are coming from the eastward and bound for Harlem Bay, round Fokai Point in 13 or 14 fathoms, about a ¼ mile off, and after rounding the point, either haul up along the eastern shore, to pass between it and the Middle Rocks, carrying 7 and 8 fathoms water through, or pass between the Middle Rocks and Tsincoe Island, carrying 10 and 11 fathoms: in this route, if the wind is easterly, it will perhaps be best in a small ship, to prefer the first mentioned passage, as she will fetch the anchorage without tacking; but in a large ship, go to the westward of the Middle Rocks, although you should have to make a tack, as in this channel you will be far enough from the high land to avoid the variable flaws of wind, and the disagreeable consequence that might arise from being baffled in a narrow channel. If you proceed to the eastward of the Middle Rocks, remember that about North from them, and West from Fisherman's Island about ⅓ of a mile, there is a small rocky patch, with 4 fathoms on it at low water. The bearings at the anchorage in Harlem Bay, in 5 fathoms were, a small pagoda on a little hill above the circular fort, S. 73° E., Fisherman's Island S. 17° E. about 1 mile distant, Middle Rocks S. nearly 2 miles, Tsincoe Island S. 13½° W.*

Close to where the low isthmus joins the high land to Fokai Point, the entrance of a creek runs up into the low land; it is very shoal, almost dry about the entrance at low water, although large merchant vessels and war boats are sometimes laid up in the creek. From the summit of Tsincoe Island, a city is visible a short distance inland, said to be Ping-hoi, and that the creek goes up near to it: on the western side of Fokai Point, there is a village, which no doubt could furnish refreshments, if wanted. Fokai Point is in lat. 22° 33′ N. lon. 114° 53′ E. distant about 20 miles N. W. ¼ N. from Pedro Branco. The fleet of European ships touched at this bay on the 28th of December, 1804, on their passage from England round New Holland to Canton River.

Geo. site of Foka Point.

PYRAMID POINT, or South extreme of LOO-KAUP ISLAND, bears from the western part of Mendoza's Island N. 72° W. distant 10 miles, and N. 56° W. from Mendoza's Island distant 7 miles; there is a brown rock well above water, and a high island a little way to the N. N. W. of the rock, named Woong-mow; between Woong-mow Island, and Pyramid Point to the westward, is an entrance of 3 miles wide leading into a deep and safe harbour, by Europeans named BIAS BAY, and TY-LO-SO by the Chinese: it extends northward about 9 miles from Woong-mow Island, and is 4½ miles broad, formed by high land on the northern and eastern sides, and numerous small islands on the western, dividing it from Ty-poong harbour: the depth is from 10 fathoms at the entrance, gradually decreasing as you run up to the northward, or haul toward the eastern shore.

Bias Bay.

Directions for going into the harbour.

If coming from the eastward, you intend to enter Bias Bay or Harbour, pass round Mendoza's Island at a mile distance, and from the western part of the Island steer N. W. by W. or W. N. W. for the opening between Pyramid Point and Woong-mow Island; as before stated, there is a large brown rock above water a little way to the S. E. of Woong-mow, and both the rock and island are situated a short way to the westward of the western point of

* In 1810, Captain Wainwright in H. M. ship Chiffone, rode out an easterly gale in Harlem Bay, and was of opinion that a rock lay in the passage between Mendoza's Island and Middle Rocks, as a high breaker was seen in that direction at times, but it could not be found by the boats. Lieutenant Ross also searched for it, and worked about that part in the vessel, and had never less than 10 or 11 fathoms water; he also made enquiries of the numerous fishermen who are always employed about that spot, but none of them knew of any rock being there; it is therefore, probable, that the breaker proceeded from the ebb tide running out of Bias Harbour, between Mendoza's Island and Tsincoe, which meets the strong current that generally runs to the westward along the coast, when the wind blows from the eastward.

Harlem Bay, off which you will perceive some dry rocks; 1 of these, from its size and white appearance, is conspicuous, from which, the point was called White Rock Point. From Mendoza's Island to the entrance of Bias Bay, the depth will be from 13, to 10 and 9½ fathoms on a mud bottom; if the wind will not allow you to steer for the entrance, and it become necessary to turn, remember, there are 2 sunken rocks 7¾ miles West from Mendoza's Island; therefore, when standing in that direction, do not go farther West than to bring Woong-mow N. ¼ E. until you have brought Tsincoe Island to the southward of East: another mark is, not to bring Acoong-chow rock to the southward of S. by W. ½ W. when you are standing to the westward; these sunken rocks are the only dangers you have to guard against. When you have arrived between Woong-mow and Pyramid Point, if the wind is easterly, pass nearest to the former in 9 fathoms water, and from thence steer up North: you will perceive a small island situated near the eastern shore about 2¼ miles above Woong-mow, and its surface much covered with long grass and detached black rocks; this island is named Sam-coke, and between it and Woong-mow, but nearest to the latter, there is a small rock, even with the surface at high tide; and the ground is not clear, close round the rock. Proceeding up the harbour, you have very regular soundings, from 9 fathoms decreasing gradually, and will observe several sandy beaches on the East side, and the remarkable rock named Chueng-poong-chow to the westward, situated in the passage that leads toward Ty-poong Harbour: continue your course above Sam-coke Island, and the point that is about 1⅓ mile to the northward of it, after which, you may anchor any where between this last mentioned point and 2 small green islands called Isang-chow, situated to the northward near the shore. You will find 5½ or 5 fathoms mud to be a good birth, about 1½ mile off the eastern side of the bay, where you are landlocked, and distant 4½ miles above Woong-mow, bearing S. or S. ½ E. On the eastern shore, there are several villages, very populous, where no doubt refreshments could be obtained. If the wind is unfavorable for making a direct course up the harbour, you may turn up, there being no danger whatever, gradually decreasing your depth when standing to the eastward, and increasing it when standing to the West toward the islands. There are a number of stages erected about the harbour, which consist of 2 large spars driven into the ground about 10 feet asunder, having a winch on them, with which the fishermen heave up their nets; be careful and not run them down, as, besides distressing the owner, they are strong enough to injure your copper and sheathing.

TSANG-CHOW, or GREEN ISLANDS, are 8½ miles above Woong-mow, and in the narrow channel to the East of them, there is but 2 fathoms water: to the westward of them, there is 5 fathoms, to the northward 3½ and 3 fathoms in the middle, decreasing to either shore, which would afford an excellent situation for a small ship to repair any damages sustained. On the northern shore of the inlet, about 3 miles up, is situated the town or city of Fan-lo-kong which is the residence of a mandarin of some rank, perhaps the 3d or 4th order.*

About 4 miles to the W. N. W. of the 2 small islands, Tsang-chow, there is a tall pagoda on a small green island, near the northern shore.

HONG-HAI BAY, situated about 6 leagues to the N. Eastward of Fok-ai Point, is ex- Hong-hai Bay.

* The Antelope procured a large supply of poultry, some bullocks, vegetables, &c., at this place through the interpreter, all of which he no doubt procured at a cheap rate. Europeans must, however, always lay their account at paying the Canton Compradore's price, if they employ a Chinese to purchase for them, as they seem to think themselves bound to prevent your getting it cheaper, and although they do not benefit themselves, will instruct the seller as to the price he should demand, satisfied that he has made you pay so much of your money to 1 of his countrymen.

This remark was made by Lieut. Ross, who did not land himself at this place, and it is chiefly from the accurate survey of the South coast of China, by this able officer, and his coadjutor Lieutenant Maughan, that the foregoing instructions have been given to navigators.

tensive; but in the upper part of it, the water shoals to 3 or 4 fathoms, and it is entirely open to S. W. and Southerly winds. There are several islands interspersed over this bay, of which the largest Hong-hai, lies in the middle of it, the town of this name, and the large town of Ty-sammee on the East side, which has a harbour for salt junks, with 2 fathoms water on the bar, at the upper part. There are 2 rocky islets at the entrance of the bay, named Toong-teng, and Sy-teng, and about 6 miles to the S. W. of them, lies a *white rock*,* which bears East from Fok-ai Point 8 miles, and 1¾ mile S. by W. of it there is a rock under water, with 13 fathoms water close to it. The passage between Fok-ai Point and these rocks is safe, with 12 and 13 fathoms water, and 10 or 11 fathoms between them and the 2 rocky islets mentioned above, which shoals to 6 fathoms close to Hong-hai Island.

adjacent islands,

and coast.

Kin-ngao West point, forms the eastern extremity of the bay, and fronting it to the S. Eastward, there are 3 islands with rocks near them; the depths a little way outside of these islands are 10 and 11 fathoms, and they should not be approached under the latter depths. Kin-ngao East point, called also Sha-long-tow, situated about 4 leagues more to the eastward, has 2 islets and a reef projecting from it, with 13 fathoms water within a mile of the outer islet; and this point, is the western extremity of the bay Hie-che-tchin. The coast, in some places near the sea, is low and sandy, but betwixt Mirs Bay and this place, the country inland is generally high, with many hills of similar appearance to each other. Mostly all the hills and islands on the coast, have a steep, rocky, and sterile appearance, although some of them are crowned with verdure.

Geo. site of Pedro Branco.

TY-SING-CHAM, or PEDRO BRANCO, in lat. 22° 19½′ N., lon. 115° 7¾′ E., or 49 miles eastward of the East end of Great Lema,† fronts the western part of Hong-hai Bay, being about 5 leagues to the S. S. Eastward of the other white rock situated in the entrance of that bay. When bearing North, it appears separated into 2 rocks, and the summit is of a white colour; it is bold to approach, having 20 fathoms close to the outside, and 19 or 18 fathoms on the North side, decreasing to 13 fathoms near the other White Rock (mentioned above) in the channel between them, which is wide and safe. The depths increase regularly in the offing, to 40 fathoms about 10 or 11 leagues to the southward of Pedro Branco.

Hie-che-tchin Bay.

HIE-CHE-TCHIN BAY, or KHEE-SEAK BAY, formed on the East side of Sha-long-tow Point, extends a considerable way inland to the northward, with depths of 7 to 5 and 6 fathoms, and 3 or 3½ fathoms at the upper part. It affords shelter from West, and northerly winds, and from the N. E. monsoon; but is exposed to S. E. and Southerly winds. Khee-seak City lies about 5 miles within the East point of the bay a little inland, and that point is fronted by Toong-cat Islet or Rock about a mile off, and Sy-cat or Khee-seak Rock about 3 miles to the S. S. Westward, having 12 fathoms water between them. Khee-seak Islet is in lat. 22° 43′ N.

Geo. site of Sand Downs Point.

From hence, the coast extends about E. by N. ¼ N. 18 or 16 leagues to a point of land with hills and Sand-Downs, in lat. 22° 56′ N., lon. 116° 33′ E., having a reef and some islets projecting from it to N. Eastward, with 13 fathoms close to, and about a league to the westward of it, there is another islet. Several isles lie close to the coast betwixt the East point of Hie-che-tchin Bay, and a small hill near the sea, called BLACK MOUNT, situated about 7 leagnes to the eastward of that point, and 4 miles to the N. E. of another point fronted by rocks, with a fort and town on its western side, in Cup-chee Bay. Between Black Mount and the point of Sand-downs, the coast forms a bay with a large town in it, and 2 pagodas, with numerous fishing boats, where there is shelter only from northerly winds. The whole of this part of the coast, may be approached to 4 or 5 miles, in soundings of 13

* This rock has sometimes been mistaken for Pedro Branco, but it bears from the latter N. N. W. distant 16 miles.

† By Lieutenant Ross, in his survey of this coast.

and 14 fathoms at that distance: the depths increase gradually in the offing, to 26 fathoms about 13 leagues to the S. Eastward of the bay last mentioned.

CAPE GOOD HOPE, in lat. 23° 11′ N., bears N. E. from the point of Sand downs, distant 8 leagues, having on the West side of it Orinsis Bay, with anchorage in 6 or 7 fathoms, and shelter from N. E. winds. Between this bay and the point of Sand-downs, there is a projecting part of the coast lined by reefs; with Tong-ly Fort and bay to the S. W., where a ship may occasionally anchor. This part of the coast, may be approached to 10 or 11 fathoms; and Cape Good Hope to 8 or 9 fathoms, which is high, with low land around. To the N. Eastward of the Cape, there is *said* to be shelter from southerly winds in 5 or 6 fathoms, between 2 islands surrounded with dangers. There is shelter under the West end of Great Lam-ock Island in 7 fathoms, with a small high peaked island, having a high pagoda on it, bearing about West or W. ¼ N., Hau-kay pagoda N. 18° W., and Foun-kay Town E. by N. ½ N., the outer Lam-ock Islands S. 70° E. distant 6 leagues; here, a ship is sheltered from N. E. and East winds. Cape Good Hope, Orinsis Bay, and adjoining coast.

LAM-OCK ISLANDS (the outermost,) in lat. 23° 14′ N., lon. 117° 19′ E., are a group of low small isles, encompassed with extensive reefs, having 20 and 22 fathoms water very near them on the outside. Their southern extremity bears East from Cape Good Hope about 11 leagues, and 5 leagues distant to the S. Eastward of Great Lam-ock, which is a large island with 2 hills and some villages on it, situated near the main. Geo. site of the Lam-ock Islands, the anchorage, channels, and dangers.

LAM-ON ISLANDS, another group similar to the former, and apparently connected with them by straggling rocks under water, lie off the S. E. part of Great Lam-ock, and are sometimes called the western group of Lam-ock Islands.

There is no passage for ships betwixt the coast and Great Lam-ock Island, but there is a channel betwixt it and the other groups in the offing, through which the ship Auspicious, passed in April, 1807, and had pretty regular soundings; but care must be taken to avoid a reef of rocks even with the water's edge, which lies off the East end of Great Lam-ock Island.

A ship passing outside of all these islands in the night, should not come under 25 fathoms, for the soundings are not very regular close to them on the East side.

To the northward of the outermost Lam-ock Islands, there is a deep bay, with 15 and 16 fathoms water off its entrance, and 5 rocks about the size of a boat, lying nearly North and South of each other, which are distant about 4 leagues to the E. N. E. of Great Lam-ock; there is also an island on each side of the point that forms the eastern extremity of the deep bay. About 5 leagues E. S. E. from this point, and 4 leagues off shore, 2 islands called the Brothers lie near each other, in lat. 23° 30′ N., lon. 117° 44′ E., with depths of 18 to 20 fathoms betwixt them and the point, and 23 or 24 fathoms outside. Geo. site of the Brothers.

A SHIP bound to AMOY having rounded Lam-ock Islands, and the Brothers, should steer about N. E. by N. for Chapel or Perforated Island, keeping within 3 or 4 leagues of the coast. This island, called by the Chinese Nan-ting-su, or Tang-ti, is in lat. 24° 10′ N., about lon. 118° 10′ E., and when bearing E. N. E. or W. S. W., a hole through it is perceived. With it bearing N. by W. 4 leagues, in 26 fathoms water, a remarkable round hill may be seen on the coast bearing about N. W. by N.; steer then to pass close to Chapel Island on either side, where the depth is 14 or 15 fathoms, if not too near the island and banks that lie toward the main. From hence, steer northward for the entrance of the bay or harbour, keeping in 11 or 12 fathoms, and Ou-su, a long island in the entrance will soon be seen, (called also Great Goeve) at each end of which, there is a rocky hill, and in the middle, a sandy bay. To the N. E. stands a pretty high rock, which may be passed on either side, Geo. site of Chapel Island and sailing directions from Lam-ock Islands to Amoy harbour.

but it is preferable to pass about ¾ or 1 mile to the eastward, in 16 fathoms water. From hence, the channel is perceived open, betwixt the Little Goeve (which lies to the northward of the Great 1) and 5 islands to the N. Eastward; it is about 1½ mile wide, with 12 to 14 fathoms in mid-channel, which is the best track. When through, steer N. W. by N. for the South-west part of Amoy Island, called also Hia-men-sou, and steer along it within ½ a mile distance, the soundings being very regular. The harbour is situated to the N. Westward, close to Amoy City, and easily discerned by the Junks or small vessels at anchor there, betwixt the city and the Island Co-long-sou, fronting it to the eastward.

On the South side of the bay, the entrance of Chin-chin River is situated; and outside, to the northward of the entrance, lies the large island, and town of Quemoy. The bay and harbour of Amoy are very safe for any number of ships, sheltered from all winds; but although it is the chief port of the province of Fokien, no Europe ships have been permitted to trade there for a considerable time. At present, it seems difficult for a ship touching here, to procure articles of any kind;* the Mandarins are liable to feel the displeasure of government, if a discovery is made, that they have offered any encouragement to induce foreign ships to visit the out-ports along the coast.

Toe-kow. TOE-KOW, in lat. 24° 48′ N., distant about 11 or 12 leagues to the N. E. of the entrance of Amoy Harbour, is an open bay, exposed to N. E. and Easterly winds; the anchorage is within a mile of a reef of rocks bearing to the S. Westward, and a shoal bears from it S. by E. There is sometimes a demand for opium at this place, but there is difficulty in procuring the dollars for it, and the danger is great, if a gale come from eastward whilst a ship remains at anchor in the road; there being no room to work out to sea, she must trust to her ground tackle. About 3 miles to the N. E. of this place, there is another small bay, full of rocks and foul ground.

Geo. site of Chin-chew Bay. CHIN-CHEW BAY, in about lat. 24° 54′ N., lon. 118° 40′ E., about 3 or 4 leagues to the N. Eastward of Toe-kow, is a fine large bay, well sheltered from northerly and southerly winds, by the projecting points of land on each side. From the outermost point, which forms the western side of the bay, a reef and sand bank stretches to a considerable distance, which should have a good birth in rounding the point. Chin-chew Harbour and Town, are situated at the bottom of the bay, on the western side; the harbour is covered from the bay by a point of land, having on it a large square pagoda: on the other side of the point, may be seen the numerous masts of the Junks which are moored in the harbour.

Lam-yet Islands. To the N. Eastward of Chin-chew Bay, in about lat. 25° 0′ N., the LAM-YET Islands commence, and these with other groups, form a great chain of islands stretching along the coast to the N. Eastward, many of them only rugged rocks. There are safe channels betwixt some of these groups of islands, and places of shelter inside of several of them.

Geo. site of Ting-hoy Harbour. TING-HOY HARBOUR, in lat. 26° 10′ N. lon. 119° 57′ E. is a safe anchorage, where the Canton was piloted into by a fisherman, on the 7th of August, 1797; she anchored in 7½ fathoms blue mud, opposite to the town, entirely surrounded by land. Here, she procured 40 butts of water, and a few bullocks; sailed on the 18th of August, for Macao, and arrived there on the 7th of September. After weighing from Ting-hoy Harbour, she steered between E. S. E. and South in passing out amongst the islands which front the bay and harbour, the soundings regular from 7 to 16 fathoms, soft ground.

* The Canton, after losing her masts, rudder, and boats, in a Ty-foong, on the 2d of July, 1797, to the eastward of Luconia, in lat 18° N., lon. 127° E., was drifted round to the northward of the Island Formosa; on the 24th of August she anchored in 8 fathoms water at the entrance of Amoy Harbour, where she remained till the 31st. They could not get any supplies here, nor would the Mandarin forward a letter to Canton with 50 dollars paid down; and what water they procured, was brought from the shore in a boat they had built on board.

About 3 or 4 leagues South from Ting-hoy Point and Town, there is a rocky bank, sometimes dry, situated about 2 leagues from Mey-hou-so Point, which forms the southern extreme of the bay. The depths in the channel, are from 10 to 15 fathoms between the rocky bank and the island, and about the same, betwixt Mey-hou-so Point and the group of islands, situated abreast of it: between this group and the next islands to the northward, the passage is wide and safe, with a rocky islet bounding it on the North side, which having rounded, a ship should steer westward for Ting-hoy Road, if bound there. This may be considered the best channel to pass through amongst the islands, into the bay, and it is about 4 leagues to the eastward of the road. and to sail into it.

The river Chang falls into the bottom of this bay, and about 7 leagues up, stands the city of Fu-chew, or Hou-chew; at the entrance of the river, there are several islands and banks, separated by narrow channels from each other, and a little inside of these banks, there is 6 or 7 fathoms water.

N. Easterly winds prevail on this part of the coast, generally during 9 months of the year, or from the beginning of September to June; when these winds blow strong, which often happens, the weather becomes very thick with rain, rendering the navigation unpleasant and hazardous. These N. Easterly winds, sometimes set in very early; for the Eaton bound to Chusan, when off Amoy about the 4th of August, 1699, got N. E. winds, and with much labour, was 6 or 7 weeks getting from thence to Chusan: the Limpo at the same time, bound to the same port, was forced to cut away her main and mizen masts, and bear away for Macao; and Captain Hosier, in August and September, 1700, could not gain his passage to Chusan. Winds, weather, and Ladrones.

Small ships on this coast, ought to be guarded against any attack from the Chin-chew Ladrones, who are often very numerous here, and on other parts of the coast, some of their Junks having 6 or 8 guns, and from 100 to 200 men.

The ship Ann, Captain John Churchman, from the Island Timor, bound to Canton River with a cargo of sandal-wood and wax, was boarded by the Chinese Ladrones near the Lema Islands in 1808, who killed the Captain, officers, and all the crew except 5 or 6 Lascars: of these, 3 reached Canton in February, 1810, and related the circumstance.

HEY-SAN, or BLACK ISLANDS, in lat. 28° 53′ N. are a group of islands situated a few miles distant from the coast opposite, and near them the depth is 22 fathoms. A ship sailing from the islands off Ting-hoy Point toward the Hey-san group, should not borrow too near the coast in the night, on account of other islands scattered along it in some places. Hey-san Islands.

QUE-SAN ISLANDS, are the next group to the northward, and distant 5 or 6 leagues from the main; the S. Easternmost, called Pata-he-cock, or Table Island, is in lat. 29° 22′ N. lon. 121° 52′ E. These are the southernmost islands of the Thusan or Chusan Archipelago, and are those which ships steer to make, when coming from the South toward Chusan; being considerably detached from the others, and fronting the bay that leads to the southern or best channel, they are easily known. To the westward of the Que-san group, there is near the main, an island with some islets or rocks contiguous, called the Bear and Cubs; and the nearest group to the N. W. of the Que-sans, is called the Whelps. Farther to the N. W. there are other groups of isles and rocks on the S. W. side of the channel, the most considerable of which is an island called the Buffalo's Nose. At the N. W. part of this island there is good anchorage in 10 fathoms, between it and the adjacent islands called the Ploughman, and the Calves, where ships bound to Chusan, ought to stop until a pilot is procured. H. M. S. Lion, at anchor here, in stiff clay bottom, was sheltered from all winds, with the Ploughman bearing N. W. by N. and the North end of the Buffalo's Nose N. E. by N., and procured bullocks, goats, and fowls, at moderate prices. Geo. site of Quesan Islands, channels, and dangers near them.

There is a channel on each side of the Que-san Islands, leading to the bay, but there are

2 rocks in the South channel, which require care in passing. One of these is a small rock covered at high water, bearing about S. W. by W. from Pata-he-cock, distant 4 leagues, which is avoided by keeping within 1 or 2 leagues of the Que-san Islands. The other rock, on which the Holderness struck, lies near these islands; when on it, the East end of the Buffalo's Nose bore about N. N. W., largest of the group called the Whelps N. N. W. $\frac{1}{2}$ W., body of the southernmost small Que-san S. E.; peak in the centre of the second Que-san S. E. by E., 3 small rocks (of which 2 only are visible at high water) E. S. E. $\frac{1}{2}$ S., body of the third Que-san East, distant $1\frac{1}{4}$ or $1\frac{1}{2}$ mile, and the northernmost part of the Que-sans N. N. E. Betwixt this rock and the other to the S. W., the depths are 6 and 7 fathoms; close to the westward of the Whelp group, there is 5 fathoms, and 7 fathoms in the fair channel to the eastward.

Lowang, and its adjoining channels.

LO-WANG, is a large island about 7 or 8 leagues to the northward of the Que-san group, between which and the East end of Chusan Island, there are several narrow channels that lead to the harbour, through amongst the islands of the Archipelago; but that to the southward of Lo-wang and its adjoining isles, having the Buffalo's Nose and the Ploughman on the West side of it, is considered the best. Betwixt the West end of Lo-wang and the opposite low coast, the channel is contracted by islands, and separates into 3 passages; that close to the West part of Lo-wang, is not 3 miles wide, with depths of 100 and 120 fathoms in some parts. This passage is bounded on the West side by several small islands, and 1 of considerable extent, called Foo-to-san, having 2 islands off its South end. The passage round these islands to the southward, has 7 and 8 fathoms water, which deepens to 50 and 120 fathoms near the West point of Foo-to-san. The third, or land passage, is formed between the island last mentioned, and the low land to the northward, which is partly covered on spring tides; and in it, the depths are from 14 to 24 fathoms. Being abreast of the Whelps, a N. N. W. course leads fair through the channel toward the West end of Lo-wang, where it separates into the 3 passages described above; and when through either of these, the channel takes a N. E. direction to Kee-to Point, which is high, and distant 5 or 6 leagues. There is anchorage on either side of the land that forms this point, about 3 or 4 miles to the southward of the point; but off it, there is no ground at 100 fathoms, with strong eddies and a rapid tide betwixt it and an island and rock to the eastward, which may be passed either to the East or westward.

Chusan Harbour.

CHUSAN HARBOUR, is 3 or 4 leagues to the northward of Kee-to Point, formed by numerous islands at the entrance, 1 of which, called Deer Island, lies well out, directly South from the city of Chusan, and bounds the entrance to the harbour on the N. E. side; the South side of it is bounded by an island called the *Elephant*, and the adjoining islands to the northward. There is a rock in the entrance of the harbour, on which the Hindostan struck, which is avoided by keeping Kee-to Point open with Deer Island; it lies off Sarah Galley Island which is small, and when on with the Flagstaff on Chusan Hill, a ship will be abreast of the rock.

Geo. site of the city.

The depths in the harbour are from 5 to 9 fathoms, where ships moor abreast of the city, surrounded by land, and sheltered from all winds. The city of Chusan is in lat. about 30° 26′ N. lon. 121° 41′ E. or 21 leagues to the northward of the Que-san islands; it stands near the S. W. end of the island Chusan, which gives name to this extensive Archipelago, and is much larger than any of the others. The tides are very irregular amongst the islands, and although the water is of great depth in some places, there are several good harbours formed between the numerous islands, with moderate depths of water. Outside of the islands, at a small distance, the depths are from 20 to 30 fathoms.

THE FOLLOWING REMARKS, for sailing into Chusan Harbour, taken from the

Northumberland's journal, may probably be of use to any ship which hereafter visits that port.

Remarks for sailing to Chusan Harbour,

July 1st. 1704, saw land bearing N. W. ½ N. distant about 12 leagues, making in a high peak, and shortly after, saw land all round, with Pata-he-cock Island bearing as above; steered from W. to W. N. W., leaving it and the Que-san Islands on our larboard side, and a small island in mid-channel with a rock off it, on our starboard side. At 9 P. M. anchored in 6½ fathoms, with the North point of the Buffalo's Nose W. N. W. distant 5 miles.

At 4 A. M. 2d. July, weighed with the wind at S. S. E., and steered N. W. till we brought the passage open, then edged in N. by W. North, and N. by E., keeping Lowang close aboard, leaving Gotto Island on the larboard, and Bird Island on the starboard side, having no ground 20 fathoms, until well over to Kee-to Point, had then 17, decreasing to 11 fathoms, when at 11 A. M. anchored in 10 fathoms with Kee-to Point N. ½ E., Round-about Island N. by E. ½ E. distant 2 leagues. Finding the tides very strong, with fresh S. E. winds, shifted our birth nearer to the shore, and anchored again in 10 fathoms, with Kee-to Point N. N. E., and Round-about Island N. N. E. ½ E. distant 4 miles.

July 4th. Having got permission from a War Junk, to proceed for Chusan, at 4 P. M. weighed with the flood tide, and wind at S. S. E.; steered N. E. by N. and N. E. and passed between Kee-to Point and Round-about Island, keeping the island close aboard, as the tide sets over toward the main, then steered for the West point of Deer Island, which kept open with Kee-to Point, to avoid a *sunken rock*, that lies in mid-channel off Sarah Galley Island; but when the point of the island and the flagstaff on a hill of Chusen are in 1, you are abreast of the rock. When clear of it, hauled up for the outer harbour, and anchored in 10 fathoms between Trumball and Sarah Galley Island, and moored with the best bower to the eastward, and the stream to the westward, the West point of Sarah Galley Island bearing S. ½ W. Trumball Hill N. by W. ½ W. distant ½ a mile.

July 18th. The Mandarin's having returned to Chusan, (their absence being the cause of our delay) got permission to proceed into the inner harbour, therefore, at 9 A. M. weighed with the flood, and a light breeze at North; kept close aboard of Macclesfield Island, having no ground at 19 fathoms, but when we reached the point, found the ebb tide not made, stood then over to Guardhouse Island, and in mid-channel had regular soundings 8, 7, 6, 5, 4¼, and less 4 fathoms; judging we were near the middle ground, tacked, but gaining no ground, anchored in 7¼ fathoms between it and Macclesfield Point. When the tide made, weighed, and dropt down abreast of the factory, moored on the flood in ¼ less 4 fathoms, with the best bower to the westward, and the small bower to the eastward, with Guardhouse Island bearing W. by S., Factory House N. E., Trumball Hill S. S. E., Macclesfield Point S. S. W.

and to depart from it.

Weighed from Chusan Harbour on the 4th of December, with a fresh breeze at N. W., but the eddy tide drove us on the bank off Guardhouse Island, ran out a small anchor and hawser, and the flood tide making, hauled off into 7 fathoms, then made sail; steered S. S. E. and S. by E. keeping nearest the West side of the passage, also kept Kee-to Point and Roundabout Island open, to avoid the Macclesfield Rock, and passed between that point and the island. Here, found strong ripplings; steered afterward more easterly for the S. E. passage, and at noon was fairly in the opening steering S. E., having a small round island, and a long low ragged island abreast of a deep bay on our larboard side, John Peek's Island being on our starboard side.

Ning-po River, and contiguous coast.

NING-PO, or LIMPO, river's entrance, is about 9 leagues to the westward of Chusan Harbour; there is a channel leading to it from Kee-to Point, another from Chusan Harbour, and the northern channel is between the coast and the northermost of the Chusan Archipelago, which also leads to Chusan Harbour. Close to the entrance of Ning-po River, there are some small islands, betwixt which and the East point, lies the proper channel, hav-

ing from 3 to 3½ fathoms on the bar at high water, and 5 to 6 fathoms inside. The city of Chin-hoy stands on the West side of the entrance, and Ning-po city about 5 or 6 leagues up the river. Since the year 1756, English ships have not traded to Chusan, or to Ning-po River; but there is a considerable trade carried on by the Junks, from hence to the Japan Islands, distant about 3 or 4 days sail. From Ning-po River, the coast stretches about 8 or 10 leagues N. westward to Han-chew Bay, a place of great trade.

Nankin. NANKIN, or KIAM-NIM, in lat. about 32° 5′ N. lon. 119° 0′ E., situated near the mouth of the river Kiam or Kiang, was formerly the seat of government, and a place of great trade, being the largest city in the Chinese Empire. The river is about a mile wide at the city, with deep water in it, and was formerly navigable by vessels of any size. The articles manufactured here, being generally of superior quality, a considerable trade continues to be carried on between it and other parts of the empire, chiefly by the inland navigation.

Geo. site of Tchin-san Islands; TCHIN-SAN ISLANDS, in lat. 30° 20′ N. lon. 122° 36′ E. are 2 small islands, situated to the eastward of the Chusan Archipelago, having soundings of 35 fathoms about 6 leagues outside of them. To the N. N. E. of these, about 10 or 11 leagues, in lat. 30° 45′ N. there are 2 other islands, called Te-tchong, and Pa-tcha-san, with soundings of 30 fathoms about 5 or 6 leagues to the eastward; and the soundings extend a great way out from this part of the coast, with strong tides or currents, veering all round the compass in 10 or 12 hours.

To sail toward the Yellow Sea. A ship bound to the Yellow Sea, should steer about N. ½ E. and North from the islands last mentioned, until in lat. 33° N., to avoid the shoals off Kiang River, and the depth will decrease to 17 or 18 fathoms sandy bottom. From hence, the coarse is about N. by W. to pass mid-way between the coast of China and the S. W. extremity of Corea, into the entrance of the Yellow Sea; the same course leads directly toward Shan-tung Promontory, in soundings between 20 and 40 fathoms, shoaling to 15 and 12 fathoms, with overfalls near that head-land.

Geo. site of Shan-tung Promontory. SHAN-TUNG PROMONTORY, is the high eastern extremity of a long peninsula, projecting from the coast a great way to the eastward; the N. E. point of which, in lat. 37° 25′ N. lon. 122° 27′ E. is the easternmost land of China; and the South point in lat. 37° 0′ N. lon. 122° 23′ E. has an island about 4 or 5 miles to the S. W. with rocks between it and the main. From this point, the coast extends West and W. by S. about 20 or 25 leagues, and then turning round to the S. Westward, forms a great bay; at the South part of which, the Whang-ho, or Yellow River, falls into the sea.

Geo. site of Cape Zeu-oo-tau, adjacent harbour, coast and islands. CAPE ZEU-OO-TAU, in lat. 37° 36′ N., lon. 121° 6′ E., bearing about W. by N., 22 leagues distant from the N. E. point of Shan-tung Promontory, is a high steep headland, forming the northern extreme of the bay and harbour of Ki-san-seu: to the eastward of this cape, and fronting the bay, there is a group of high islands in lat. 37° 40′ N. which are of considerable extent, with some reefs about them. The channel is safe between this group and the land to the southward, and also between it and the cape to the westward: between Shang-tung Promontory and this place, the coast may, in sailing along, be approached to 13 and 14 fathoms. Under the North point that forms Ki-san-seu Harbour, there is shelter from N. E. winds, by anchoring in 5 or 4 fathoms; and there is shelter in the southern extremity of the harbour, mostly from all winds, but the depths there are only 3½ and 3 fathoms.

Geo. site of Ten-choo-foo, Mi-a-tau Islands and Strait. TEN-CHOO-FOO (CITY) in lat. 37° 48′ N., lon. 120° 22′ E., bears about W. 20° N. from Cape Zeu-oo-tau, distant 12 leagues; the coast between them contains some deep bays, and may be approached to 9 or 10 fathoms; here, the water is not so deep as it is farther

to the eastward. To the northward of Ten-choo-foo, the Mi-a-tau group of islands is situated, separated from it by the Strait of Mi-a-tau, in which the soundings are rather irregular, between 5½ and 6, to 14 fathoms water. A reef projects from the S. Easternmost Mi-a-tau Island; and from the point of land on the West side of Ten-choo-foo, a bank of sand stretches to the westward some distance: from hence to the Sha-loo-poo-tien Islands, the depths are 13 to 15 fathoms in the fair track, steering up the gulf of Pe-che-lee.

Sha-loo-poo-tien Islands.

SHA-LOO-POO-TIEN ISLANDS, distant from Ten-choo-foo about 40 leagues W. N. W. ¾ N. are a considerable group, extending in an easterly and westerly direction, with shoals connecting some of them. From abreast of the South side of these islands, the depths decrease gradually to 7 or 6 fathoms mud, about 5 leagues to the W. S. Westward, which is the anchorage off the mouth of Pei-ho, or Pekin River. Here the Lion, of 64 guns, and the Hindostan anchored, with the embassy for Pekin, and made the lat. 38° 51′ N, lon. by ☉ ☽ 118° 2′ E., and 117° 50′ E. by chronometer.

Geo. site of the anchorage off Pekin River.

It may be observed, that the Yellow Sea, and the gulf of Tartary, formed betwixt the Japan Islands and the continent, are subject to thick fogs during the S. W. monsoon, rendering the navigation very unpleasant and hazardous; and there is much stormy weather in the N. E. monsoon.

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## *DIRECTIONS for SAILING between CANTON RIVER and MANILLA BAY, in either MONSOON; and to PULO AOR, and the STRAIT of BANCA, in the N. E. MONSOON.*

GENERAL INSTRUCTIONS, for sailing to and from China, have been given in the 2d Section under the title CHINA SEA; in addition to which, some brief directions may be useful, to such navigators as are unacquainted with this navigation.

To sail from Macao to Manilla, in the S. W. monsoon;

The Portuguese and Spanish ships, which trade between Macao and Manilla, sail backward and forward in either monsoon. Departing from Macao Road in the S. W. monsoon, if bound to Manilla, take an opportunity when practicable, to sail when the wind veers to S. E. or eastward, with which, steer S. S. W. and southward, and endeavour to get soundings on the Macclesfield Bank. The passage may then be considered secure, for unless the wind hang at South or S. S. E., you will be able to reach Manilla Bay without tacking, and if it be at southward, steer to fall in with Goat Island, or the land on the South side of that bay.

in the N. E. monsoon;

In the N. E. monsoon, when bound to Manilla, work out by the Lema Channel, and endeavour to keep well to the eastward in crossing over for the N. W. part of Luconia about Cape Bolina, for a leeward current may be expected when the N. Easterly winds prevail. Having approached Cape Bolina or the coast near it, a good birth should be given to that cape, on account of its contiguous shoals; and after passing it and the Sisters, the coast ought to be approached within 4 to 6 leagues, and the same distance preserved from it, will be proper until to the southward of the islets and rocks off Point Capones; from thence, the coast should be kept a-board to Manilla Bay.

and to return to Macao in the S. W., and in

The S. W. monsoon is favorable for sailing from Manilla to Macao, you may then steer direct for the Grand Ladrone; and if the wind is steady at S. Westward, when the coast of China is approached, endeavour to make the Grand Ladrone bearing about N. by E. or

North; but if it incline to veer to North, or eastward, steer for the East end of the Great Lema, and proceed in by that channel.

the N. E. monsoon.

Departing from Manilla Bay, and bound to Macao in the N. E. monsoon, coast along to Cape Bolina; from thence, you may stretch off, if the wind permit a northerly course to be steered; but with the wind between N. E. and North, particularly in ships which sail indifferently, it will be proper to work along the coast, or to keep near it, till abreast of Cape Bajadore, before they stand off for the coast of China.

Directions for sailing from Macao to Pulo Aor, by the Outer Passage;

OUTER PASSAGE, from Macao toward Pulo Aor, by the Macclesfield Bank, should only be adopted in March and April: at the commencement of, and during the strength of the N. E. monsoon, the inner passage along the coast of Cochin-china is preferable.

Departing from Macao Road, if the outer passage is to be followed, keep within a moderate distance of the West sides of Potoe and the adjoining islands; when the wind blows strong, and hangs far to the eastward, there is generally a heavy sea upon the beam, with a leeward current, rendering it necessary to steer about S. S. E. from the Grand Ladrone, to get soundings on the Macclesfield Bank. With the wind at N. E. and moderate weather, a course S. by E. $\frac{1}{2}$ E. will generally carry you over the eastern part of that bank; but if 1° of lon. East of the Grand Ladrone is exceeded, the getting of soundings will be uncertain, for in such case, you will probably pass to the eastward of the bank.

In November, or December, when strong gales and cloudy weather are sometimes of several days continuance, preventing observations from being obtained, soundings should be got if possible upon the Macclesfield Bank; but if your situation is known correctly by chronometers, it can be of little utility to sound; for the bank being about 1° in extent from East to West, with various irregular depths on it, your exact position, cannot be always ascertained by the soundings. From the Macclesfield Bank, the course is S. W. to Pulo Sapata, but from having soundings on that bank, or being in its latitude, the best course to steer is S. W. $\frac{1}{2}$ S. until in the parallel of Pulo Sapata; and if then it is not seen, steer S. W. by W. or W. S. W. till in 35 or 30 fathoms water. In dark blowing weather, when the true situation of a ship is not ascertained by chronometer or otherwise, it would be dangerous to steer direct for Pulo Sapata, or to make it in the night: at such times, it is seldom seen in passing, for ships generally give it a wide birth, by keeping well to the eastward until they have crossed the parallel of lat. 10° N., and then they steer S. W. by W. or W. S. W. to get into soundings. Some ships steer S. W. by S. from the Macclesfield Bank, till nearly in the latitude of Pulo Sapata, and pass this island a great way to the eastward; but in steering that course, a good look out will be proper, in case of S. Easterly currents carrying you in sight of some of the shoals that lie to the E. N. E. and eastward of Pulo Sapata.

Having got into lat. 10° N., steer between S. W. by W. and W. S. W. until in 35 fathoms water, then about S. S. W. $\frac{1}{2}$ W., or S. S. W. $\frac{3}{4}$ W., for Pulo Aor or Pulo Timoan; observing not to deepen above 30 or 32 fathoms in crossing lat. 7° 6′ N., in order to avoid the coral bank discovered by the Charlotte, which has been mentioned under the description of Pulo Condore.

and by the Inner Passage,

INNER PASSAGE,* from Macao to Pulo Aor, should always be pursued early

* This passage, was frequented by the Company's ships in early times, and constantly, by the homeward-bound ships, upward of a century ago: the Carolina, from England bound to China by Sunda and Banca Straits, went by the Inner Passage in May, 1683, and passed in sight of Hainan.

The Fort St. David, from China, in December, 1752, proceeded by it, and saw the island Tinhosa, afterward made the coast of Cochin-china in lat. 13° N., and passed between Holland's Bank and Pulo Ceicer de Terre.

The Inner Passage, however preferable to the other, had been relinquished for a long period by English navigators, until several ships having suffered damage, and some foundered with their crews, by hauling up for the Macclesfield Bank after leaving the Grand Ladrone; the Inner Passage was again resorted to, by a few experienced commanders about 30 years ago, and since the limits of the Paracels have been ascertained, it is now generally adopted by homeward-bound ships.

in the season, and during the strength of the N. E. monsoon; it is more direct than the other, and when blowing strong, great ease is afforded to ships deeply laden, by steering from the Grand Ladrone directly before the wind.

To proceed by this passage, a S. S. W. ½ W. course steered direct from Potoe, or from the Grand Ladrone, will carry you fair between the Taya Islands and St. Esprit Bank; and the same course continued, will carry you in the proper channel to the westward of the Paracel Shoals. The North shoal bears S. 24° W. from the Grand Ladrone, distant 108 leagues, and if sights are obtained for chronometers, the course may be regulated accordingly; a S. S. W. ½ W. course will place you about 2° 50′ or 3° West of Grand Ladrone when in lat. 17° N., which is well to the westward of the North shoal, it being 2° 16′ West of that island.

If dark weather deprive you of observations, the ship will generally be to the westward of the account; for the current which sets strong to the westward close along the coast of China, continues outside with an abated velocity, seldom exceeding 15 or 20 miles in 24 hours. Betwixt the northern extremity of the Paracels and the island Hainan, the current sets mostly about W. S. W., particularly if the wind is at E. N. Eastward; and its velocity is regulated by the prevailing wind: with moderate breezes, about 15 miles of westerly set, may be expected daily in the track from the Grand Ladrone toward the coast of Cochin-china, but if strong gales are experienced, the current will probably run about 1 mile per hour to the westward, or rather more, at times.

If the current is found to set strong to the westward, a course between S. S. W. and S. S. W. ½ W. may be pursued, but not more southerly until in lat. 17° N., and fairly entered the channel to the westward of the shoals. When in this latitude, and 3° West of Grand Ladrone by chronometers, or by account, a course about S. ½ W. or S. by W. may be steered, to make the coast about Cape Varela. With clear weather, and the wind steady at N. E. or N. N. E., Pulo Canton may be approached, or any part of the land to the southward of that island may be made, and coasted along at a moderate distance; but with thick weather, and the wind inclining from the eastward, it is prudent not to haul close in for the coast until abreast of Cape Varela, in case of getting into the deep bay of Phuyen to the northward of that cape. If the conical mountain at the North part of this bay is discerned, it may be useful as a mark to point out the distance from Cape Varela, if night is approaching, or the funnel on the Cape Mountain be obscured by clouds.

along the coast of Cochin-China.

When to the southward of lat. 15° N., the current near the land, begins to set strong to the southward; from lat. 14½° to 11½° N., it frequently sets to the southward along the coast during the strength of the N. E. monsoon, at the rate of 40, or 50, and sometimes 60 miles in 24 hours; but it is not always so strong, and becomes weaker beyond these limits.

If the land has not been seen prior to reaching Cape Varela, it should then be approached, and kept within the distance of 4 or 5 leagues: from abreast of the Cape at the distance of 3 to 5 miles, a course steered South or S. ¼ E., leads fair from point to point for 6 or 8 leagues; but in the night, steer South from the cape until about 9 leagues from it, to give a birth to Pyramid Island, and the others around. This island will be seen in passing a few miles outside of it in the night, if the weather is clear, and may be known by its conical appearance; from hence the course is S. ½ W. to pass near the Water Islands, situated about 7 leagues farther to the southward, which may also be perceived in passing. Being thus far advanced, if the land appear to be distant more than 4 leagues, steer S. by W. or rather more westerly, to get a good sight of the high oblong mountain over Cape Varela False; which in coming from the northward, may be distinguished in the night from the other prominent parts of land, by its great magnitude, high appearance, and sloping down toward the sea with a gentle declivity.

If you intend to keep along the coast and pass to the westward of Holland's Bank, from abreast of the southern part of the high land of Cape Varela False, a S. S. W. or S. S. W. ½ W. course must be steered across the bay of Padaran; for here, the current diverges from

the line of the coast to S. S. Eastward, and is liable to carry a ship off the land; which, in such case, she would find it difficult to regain. Soundings of 40 to 50 fathoms will be got when crossing the bay of Padaran, if not too far out: steering across the bay about S. S. W. to S. S. W. ½ W. in the night, Cape Padaran will soon be perceived nearly a-head, or a little on the starboard bow, and cannot be mistaken; for the land in the bottom of the bay, is not discernible in the night.

When the cape is seen, steer toward it, which pass at 1 to 2 leagues distance: from this situation, a S. W. by W. course will carry you about the same distance outside of Pulo Ceicer de Terre; but if Cape Padaran is only about 1 or 2 miles distant when abreast, a S. W. course will be required to pass at a few miles distance outside of Pulo Ceicer de Terre. Having passed this island in day-light, from 1 to 2½ leagues distance, steer about S. W. by W., and bring it to bear N. by E. ½ E. before loosing sight of it from the deck; steer then S. W. by S. about 6 or 7 leagues, which will carry you clear to the westward of the Holland's Bank, and afterward steer S. S. W. ½ W. direct for Pulo Aor.

In the night, if the weather is clear, you may pass through the channel with safety, when the gap of Padaran can be discerned. In such case, from being 3, 4, or 5 miles off Cape Padaran, steer between S. W. and S. W. by W. until the gap is open: when it bears N. by E., Pulo Ceicer de Terre is coming on with it, and if the water shoals to 10 or 11 fathoms, edge out a little to the southward; for the island is low, and should not be approached so close as to see it in the night, particularly as the soundings are irregular in this part of the channel, and not a sufficient guide. When the gap of Padaran is brought to bear N. by E. ½ E., Pulo Ceicer de Terre is on with it, steer then between S. W. and S. W. by S. 6 or 7 leagues, to clear the West end of Holland's Bank, and afterward S. S. W. ½ W. for Pulo Aor.

Should the night become very dark, when abreast of, and near Padaran Cape, so as to obscure the land and the gap; a course steered between S. W. ¼ W. and S. W. ¼ S. will be proper till about 12 or 13 leagues distance from the cape; observing, to haul off from Pulo Ceicer de Terre or the coast, if the water shoal to 11 fathoms; and not to deepen above 21 or 20 fathoms toward Holland's Bank. From the West end of this bank, the nearest part of Britto's Bank is distant about 14 or 15 leagues in a W. S. W. direction, by which, a wide channel is afforded for passing between them in the night. Keeping in 16 to 18 fathoms, is a good track from Pulo Ceicer de Terre until about 5 or 6 leagues past it; or being 12 or 13 leagues to the S. Westward of Cape Padaran, a S. W. by S. course may then be steered for 2 or 3 leagues farther, to be certain of giving the West end of Holland's Bank a good birth. Do not deepen above 21 fathoms until clear of it, nor decrease the depth under 18 fathoms toward Britto's Bank, if you run far to the westward: from 21 to 19 fathoms are good depths in the channel between these banks, and having rounded the West end of the former in 20 and 21 fathoms, the direct course is S. S. W. ½ W. for Pulo Aor.

The passage between Pulo Ceicer de Terre and Holland's Bank, can only be followed in day-light by persons unacquainted, which has obliged many ships to heave to, off Cape Varela False in the night, in order to pass through the channel with day-light; by which they laboured greatly, when blowing strong with a heavy sea, exclusive of loss of time. The route outside of Pulo Ceicer de Mer and Pulo Sapata, is therefore, now justly preferred to the inside passage in the night, and even in the day by the generality of navigators.

Directions for passing outside of Pulo Sapata.

If in the early part of the night, you be near the high land of Cape Varela False, with dark blowing weather, rendering it unpleasant to heave to, or to run for the channel between Holland's Bank and Pulo Ceicer de Terre, steer about South, or S. ½ E., to pass to the eastward of Pulo Ceicer de Mer and Pulo Sapata on the following morning; or if the weather is dark, steer rather more to S. S. Eastward, to give a wide birth to these islands in passing Or in clear weather, you may pass near the East side of Pulo Ceicer de Mer, and then steer S. Westward between it and the Great Catwick, as circumstances require; or occasionally

the boats of the ship of this name, on the 25th of November, 1812, having suddenly got into ¼ less 5 fathoms water on it, when proceeding toward China by the Strait of Macassar. This shoal seemed to be nearly circular, about ¾ of a mile in extent; when upon its centre, in 4½ fathoms, Dwaalder Island bore W. ¾ S., distant about 3 leagues, Button Rock N. ½ E., about 7 miles, the South end of Pulo Laut N. W. by W., and the least water found on it was 4½ fathoms.

TWO BROTHERS, in lat. 4° 26′ S., lon. 116° 32′ E., bearing nearly East from Moresses, distant 9½ leagues, and S. S. E. ¾ E. from the Dwaalder; are 2 small, low, round islands, connected by a reef, with several thick bushy trees on them, and are open with each other bearing E. by N. ½ N. Geo. site of the Two Brothers.

Contiguous to the South point of Great Pulo Laut, there are 3 small islands of moderate height; the BUTTON, a round islet or rock, is situated near the East side of the southernmost island, having 11 and 12 fathoms near it on the outside, which is the proper channel; these isles lie about 5 leagues N. Eastward from the Dwaalder.

INNER CHANNEL, formed betwixt the middle and southernmost of the small islands mentioned above, is rather too narrow for large ships, and should not be followed unless in a case of necessity, with a commanding breeze in day-light. The Snows, Betsey, and Experiment, bound to the N. W. coast of America, went through it on the 16th of February, 1786; and Capt. Betham, of the Wellington, from China, bound to England, came through it on the 1st of September, 1815, from whose journal the following remarks are taken. At noon, after passing the Alike Islands, perceived at 3 P. M. that we could not weather the Button, and having the passage open to leeward between the southernmost and middle islands, bore away for it, and at 4 entered between the islands. A reef extends a considerable way toward the Button, and we shoaled regularly from 18 to 6¾ fathoms, which was the least water we had in the channel: a reef also stretches from the West point of South Island, toward the Dwaalder, a great way out; and a small isle just above water, united by a ridge of rocks to South Island, might in coming from the eastward, be mistaken for the Dwaalder, being somewhat like it; the 2 northern islands also when first seen bearing S. W. by W., have the appearance of the Two Brothers. When steering for the passage, borrow toward the northern island, as shoal water appears to extend from the N. E. end of South Island a long way to the northward: when the small isle mentioned contiguous to the West end of South Island, is shut in with the West point of the latter, haul to the southward, as a reef appears to project far out from the S. W. point of Pulo Laut, where we shoaled from 10, to 9, 8, 7, and 6 fathoms, keeping a lead going on each side. At ½ past 5 P. M. we were through this passage, the Moresses bearing S. W. 5 or 6 leagues, which seems safe with a fair wind in the day, the narrowest part from land to land, being apparently about a mile wide. Inner Channel between the isles off the South end of Pulo Laut.

GREAT PULO LAUT, is extensive, and from its South point a reef of breakers projects almost to the nearest island; the East coast seems free from danger, with mud soundings generally of 13 to 15 fathoms about 2 or 3 leagues off, and 20 or 22 fathoms about 8 leagues off shore. Abreast of the Alike Islands, contiguous to the shore of Pulo Laut, there are several small isles; the outermost is about 2 miles off, and bears West a little southerly from the Alike Islands. From the N. E. point of Pulo Laut, a reef projects, but the point may be rounded about 1½ mile distant, in 8 to 10 fathoms, by ships that intend to fill up their water in the deep bay formed betwixt the point and the North end of the island. This bay is sheltered from all winds but those between North and East, and the soundings are regular to the watering place under the high land on the West side, where a ship may anchor abreast of it in 6 fathoms about 1½ mile off shore, with the N. E. point of the bay bearing E. by S. ¼ S., and a small island covered with trees S. E.; this island lies on Great Pulo Laut.

Watering place. the East side of the bay, and has a shoal fronting it. Oysters may be got at the watering place, and the woods abound with wild hogs and deer.

Geo. situ. The North end of Great Pulo Laut, I made in lat. 3° 13′ S., the N. E. point in lat. 3° 23′ S., lon. 116° 41′ E. by chronometers and lunar observations. The East side of the island is moderately elevated, sloping with a gradual declivity toward the N. E. point; the N. W. part is very high land.

The narrow strait formed betwixt the coast of Borneo and this island, is navigable by boats, or small vessels, but no ship should attempt to pass through it. Europeans ought to be cautious if they land on Pulo Laut, for Captain Alves, in the ship, London, was cut off there.

Geo. site of the Alike Islands. THREE ALIKE ISLANDS, in lat. 3° 41′ S., lon. 116° 54′ E. by chronometers and lunar observations, bearing N. 47° E. from the Dwaalder, distant 15 leagues, named from their resemblance to each other, and called also Maragalongs, form a small group of 3* islands, exclusive of an islet and some contiguous rocks; they may be seen from the deck at 5 or 6 leagues distance. The channel between them and Pulo Laut is 4 and 5 leagues wide, and clear of danger, with regular depths of 16 or 17 fathoms in the middle, to 13 fathoms within a mile of the West side of the islands. These islands are also safe to approach on the outside, having from 20 to 22 fathoms water, about 2 or 3 leagues off; but in lat. 3° 37′ S., lon. 117° 48′ E., there is a *Dry* Sand Bank† about 17 or 18 leagues to the eastward of them, with a Coral Bank of 6 fathoms or less, about 2 leagues S. S. W. from the sand bank. In the fair track, from between the Two Brothers and Dwaalder to the Alike Islands, the soundings are mostly 16 to 18 fathoms, from 4 to 6 leagues off Pulo Laut.

Geo. site of a Dry Sand Bank.

Strait of Macassar; general remark. STRAIT of MACASSAR, is about 115 leagues in length from the South end of Great Pulo Laut to Point Kanneeoogan, and generally from 45 to 35 leagues wide; except where it is contracted by the great projection of this point, to 17 leagues at the North entrance. Between lat. 2° and 3° S., the strait is separated into 2 channels, by the archipelago of isles and shoals called Little Pater Nosters: the width of the western channel is 10 or 11 leagues, and the eastern one 15 or 16 leagues wide, but there are some dangers in the former, which is nevertheless much frequented, and preferred to the other, having moderate depths along the coast of Borneo for anchoring occasionally, as far as lat. 1° N.; whereas, the coast of Celebes is steep to, in many places, and destitute of anchorage. The Arniston, and other ships, which passed along the Celebes side in October or November, got speedily through the strait; and there is reason to think that this will generally be found the quickest route, for light southerly breezes prevail at times on this side, when the wind is different near the Borneo Shore; and when strong southerly currents prevailed in the middle of the strait in January and February, we found their velocity decrease a little, as we approached close to the Celebes Shore.

To sail by the Celebes Coast. TO SAIL ALONG THE CELEBES SIDE OF THE STRAIT, ships coming from the South or westward, in the westerly monsoon, ought to approach the S. E. part of Great Pulo Laut, as if they were to proceed along the Borneo side. From hence, an E. by N. to E. N. E. course should be steered, to make the coast of Celebes at, or a little to the northward of Cape Mandhar; also to give a birth to the Triangles and the Union's Shoal to the northward, and to those seen by the Laurel and Waller, to the southward: the lead should be kept going in this track, that if possible the approach to any of the shoals may be

* Called Pulo Ampat's, or Four Islands, by the Malays; the small islet making that number.

† Seen by Captain Hunter, in his voyage from Port Jackson to Batavia, in 1791. It is very small, and may probably be covered at high water.

known. Ships coming from the southward in the easterly monsoon, should steer to pass between the Island Tanakeka and the S. W. part of Celebes, if they intend to touch at Macassar for refreshments.

LAUREL'S SHOAL, called BATO BONTONGA by the Malays, is in about lat. 4° 32′ S., lon. 117° 15′ E., distant 14 or 15 leagues eastward of the Two Brothers, by the journal of Capt. Cheminant, of the Laurel. This shoal appears to be situated on the edge of soundings, which extend from it to Pulo Laut and the adjoining islands: the Laurel, on the 2d of March, 1788, steering eastward with light airs, in 35 fathoms soft ground, shoaled suddenly to 7 fathoms coral rock; anchored immediately, had 4½ fathoms, and ¼ less 4 fathoms was found by the boat, a little to the southward under the ship's stern, the current then setting nearly 1 mile per hour in that direction; and to the eastward, the depth increased to 16 fathoms about ½ a mile distant. The coral rocks being sharp pointed, and the ship pitching deep with the N. E. swell, when at 8 P. M. the weather threatening, and a breeze commencing at N. N. E., hove short, then cut the cable, but before the ship got head way, had 3 fathoms rocks, and afterward, several casts of 4 to 6 fathoms. Steering to the eastward the depth increased to 10 fathoms, then to 20, 30, and 35, soft bottom, next cast no ground with 50 fathoms. Geo. site of the Laurel's Shoal.

Captain Hunter got on the tail of this shoal, and made it in lat. 4° 35′ S., lon. 117° 19′ E. by lunar observation.

The Laurel's shoal, is probably the tail of 1 of those seen by Lieut. Davidson, of the Waller brig, on the 29th of April, 1803, extending between lat. 4° 30′ and 4° 37′ S.; which vessel passed over the tail of a coral shoal at 7 P. M., on which the bottom was clearly seen, but she had only 3 casts from 9 to 14 fathoms, then no ground 40 fathoms. About 3 miles farther to the southward, she got on the edge of another shoal *apparently dangerous*, the sharp pointed coral rocks being seen under the bottom; she had from 8 to 15 fathoms on the edge of it, then no ground 22 fathoms. About 4 miles more to the southward, she got on the edge of a third shoal in 9 and 10 fathoms rugged coral rocks, then no ground; to avoid these shoals, the sails were thrown a-back immediately when they were discovered. Upon the edge of the southernmost of the WALLERS SHOALS, at noon observed the lat. 4° 37′ S., lon 117° 8′ E. by chronometers, and 117° 7′ E., by observations of ☉ ☾ taken at 3 P. M. after running 4 leagues S. ¼ W. from noon. At this time the 4 islands Noesa Seras, were seen from the mast head, and at 6 P. M. they bore E. by S. ½ S. distant 4 leagues: they are low woody islands, may be seen 7 leagues, and by these observations, are in lat. 5° 2′ S., lon. 117° 9′ E. Waller's Shoals. Geo. site. Noesa Seras. Geo. site

TRIANGLES, or LARRE LAREEN, are 3 very small isles, situated about mid-strait between Celebes and Borneo, the 2 northernmost, in lat 3° 1′ S. lon. 117° 53′ E. The other, in lat. 3° 5′ S., bearing S. ½ W. from them, is a small sandy isle with a few bushes on it, 1 of these being very conspicuous in the centre, and breakers extend from this isle to the others. Regular soundings of 23 to 27 fathoms, stretch from the East side of Pulo Laut to these isles, and the depths are 22 or 23 fathoms to the South, and to the eastward of them, from 3 miles to 3 leagues distance: soundings also extend from them northward to the Little Pater Nosters. Geo. site of the Triangles.

When 6 or 7 leagues to the eastward of these islands, there are no more soundings obtained in steering toward the coast of Celebes, but there appear to be 1 or 2 coral banks, the situation of which is imperfectly known. The Union had 7 and 8 fathoms on a coral bank, about 8 leagues to the eastward of the Triangles, in lat. 3° 2′ S.; and the Laurel had 3 casts of 16 and 17 fathoms coral rock, then no ground 60 fathoms, with the land of Cape William rising in small hills, and bearing E. by N. northerly, distant about 11 leagues. The Coutts and fleet, returning from China, in July, 1801, kept on the Celebes side of the strait, had Soundings, and coral banks.

soundings of 27 fathoms about 11 or 12 leagues to the S. Westward of Cape William; and steering S. W. by S. about 13 miles, carried soundings from 25 to 30 fathoms, then no ground 40 fathoms. Although, possibly, the soundings experienced by those ships, were on a continued bank of considerable extent, yet it is more probable, that there are several patches hereabout; for that on which the Laurel had soundings, seems to be a small spot, considerably to the northward of the bank where the Coutts sounded upon.

Geo. site of Macassar.

MACASSAR TOWN, or CASTLE ROTTERDAM, the chief settlement of the Dutch on the Island Celebes, is in lat. 5° 9′ S., lon. 119° 36′ E. by lunar observations. This place being encompassed with numerous shoals and small isles, the navigation toward it is thereby rendered intricate. If a ship find it necessary to touch here for refreshments, the best channel is from the S. westward, betwixt the Spermonde Archipelago and the islands and shoals of Tanakeka, or that between the latter island and Celebes is the best if coming from the southward, keeping mid-channel toward the island; but a boat will be required to sound a-head if unacquainted, as the bottom is most coral in the channels, with great overfalls. Provisions and refreshments of various kinds, abound at Macassar.

The anchorage is abreast of the town in 7 or 8 fathoms, inside of Great Lyly Isle and shoal; and the channel leading to it is from southward, by keeping near the shore to avoid the Lyly shoal, but a birth must be given to a sunken rock, that lies off the point about 4 miles S. S. W. from the town.

Geo. site of Cape Mandhar.

CAPE MANDHAR, in lat. 3° 35′ S. by the Arniston's observations,* and in lon. 119° 9′ E. is the western extremity of the great bay formed between it and Macassar, in which there is said to be some harbours or places of anchorage. The cape is high land, and all the coast of Celebes from thence northward, is high and steep, destitute of soundings in most places, until very near the shore. Close to the sea, in some parts, the land is of moderate height, but all mountainous a little way up the country.

Trinder's Shoal.

TRINDER'S SHOAL, seen in the brig Amboyna, by Capt. John Trinder, is described by him as follows. At noon, October 12th. 1804, saw an extensive shoal bearing from South to N. W., the nearest part distant about a mile; no part of it appeared above water, but small breakers were seen in various parts of the shoal, the centre of which is in lat. 2° 59′ S., Cape Mandhar bearing from it S. E. by E. distant 18 miles.

If the latitude assigned above to this shoal is correct, and the relative position of Cape Mandhar, it would place the cape in lat. 3° 9′ S.; but observations taken in the Arniston, made it in lat. 3° 35′ S., which will place the shoal much farther to the southward than the latitude assigned to it above. But its relative situation as given from Cape Mandhar, will be the best guide for avoiding this *apparently* dangerous shoal; as Capt. Trinder seems not to have examined it closely, its existence is not very satisfactorily ascertained.

Lebaney Bay, watering place.

LEBANEY BAY, on the West coast of Celebes, where H. M. ship Virginie watered in 1800, is in lat. 2° 40′ S., in approaching which, a village will be seen close to the beach; bring the centre of this E. N. E. by compass, and steer for it; the first soundings will be 70 or 80 fathoms, then suddenly 40 and 30 fathoms. When the North point of the bay bears N. ½ E. and the South point S. by W., the depths will be 28 or 30 fathoms about ¼ mile off the village at the head of the bay; and farther in, the water shoals gradually to 20, 15, and 10 fathoms sand and shells. The water is excellent at a place close to the beach, about ¼ mile to the southward of the village, where the above named frigate watered in 24

*. The Scaleby Castle, bound to China, went along the Celebes coast, and on the 5th of November, 1814, had Cape Mandhar bearing East at noon, when the observed lat. was 3° 39′ S.

hours; and the Malay Chief, promised to bring buffalos and other stock, if she could have stayed 3 days in the bay.

CAPE WILLIAM, in lat. 2° 34′ S., lon. 118° 58′ E. by chronometer, is a high projecting headland, having a large bay to the eastward, said to contain some islands and shoals; the isle near the cape, is on with it bearing East. Point Kyl, is 4 or 5 leagues nearly South from Cape William, being the southern extremity of the peninsula that forms the latter cape: and Point Onkona, or Anisone, about 6 leagues farther to the southward, projects a considerable way, by which a bay is formed betwixt it and Point Kyl, and another on the South side. Geo. site of Cape William and the interjacent coast.

When Cape William bears East, about 10 or 12 leagues distant, the nearest isle of the Little Pater Nosters is discernible bearing W. by N. ½ N., distant about 5 or 5½ leagues. These isles ought to be avoided, having many shoals in their vicinity, and among them.

CAPE TEMOEL, or CAPE SAMSA, is the N. W. extremity of a peninsula of high land, projecting a considerable way from the coast to the westward, by which a bay is formed on each side, but they appear to be destitute of soundings. The coast betwixt Cape William and this place is bold and steep; we could get no soundings at the distance of 2 or 3 leagues off it, and *probably* there is none, except too close to the shore for any useful purpose. There is said, however, to be a place called Koilly, or Kayley, about 13 or 14 leagues to the northward of Cape William, famous for gold, sheep, &c.; but great caution is requisite, in communicating with the inhabitants of this coast.* Cape Temoel and adjoining coast.

There is a high table mountain in lat. 0° 56′ S., and a point of land stretching out to the N. Westward from it, in lat. 0° 52′ S., which forms the western extremity of Palos Bay.

When Cape Temoel is first seen, in coming from the northward, it makes like islands, the land that connects it with the coast being lower than the hills which form it. The N. W. point of the cape, where it projects most, is in lat. 0° 1′ N., lon. 119° 26′ E, by observations taken in the Anna, when we were all the month of February endeavouring to round it, to the northward: the South point of the peninsula that forms the cape, is in lat. 0° 8′ S. Geo. site.

About 4 or 5 miles N. Westward from the Cape, lies a small round island, called South Watcher, (or Wachter by the Dutch) having a reef projecting from its South end; and from its N. E. end, a reef of rocks and sand, extends toward the Celebes shore, more than ⅓ of the distance between them. The Laurel stood in, nearly mid-channel between the reef that projects from the South end of this island, and another stretching from the opposite bluff point of Temoel, then steered into the bottom of the bay within the island, where she was during the night, tacking every hour with the wind at N. N. E., but got no soundings. She kept near the northern shore of the bay, when coming out in the morning, to give a birth to the reef off the N. E. end of the South Watcher. It is, however, not advisable to go inside of this island; for the passage seemed to us unsafe, when at the distance of 3 or 4 miles outside.

CAPE DONDA, bearing N. 33° E. from Cape Temoel, distant about 19 leagues, is in lat. 0° 48′ N., lon. 119° 57′ E. by a series of observations of the sun, stars and moon; and the observations of Captain Heywood, make it the same. Geo. site of Cape Donda.

The mountains over this cape being very high, and having a steep declivity to the water's edge, terminating in several bold head-lands, it is difficult to distinguish the cape. It is said, contiguous land.

* Captain Woodard, who landed in the boat of an American ship, between Cape Temoel and Cape Donda, on the 3d of March, 1793, was attacked by the inhabitants, had 1 man killed, and the others made slaves; he escaped 2 years afterward in a proa to Macassar, with 2 of the men that survived.

that the ship Jane got soundings near the shore, a little to the southward of Cape Donda; but it is certain, that all this coast is very steep, for no soundings are got close to the islands which line the shore between that cape and Cape Rivers; nor do there appear to be any in the bays with sandy beaches, adjacent to the seven islands, or in those formed by Cape Temoel.

Seven Islands.

SEVEN ISLANDS, in lat. 0° 32′ N. (the body of them) fronting the coast to the southward of Cape Donda, are flat, low, and woody, not easily distinguished unless when near them, except the outermost, called North Watcher. This island is in about lat. 0° 33′ N., distant 5 or 6 leagues from the shore, and appears not so large as the others, but may be seen 5 or 6 leagues from the deck: the channel betwixt it and the nearest long level island, is about 2 or 3 leagues wide, and clear of danger.

Geo. site of Cape Rivers.

CAPE RIVERS, in lat. 1° 15′ N., lon. 120° 34′ E. by our lunar observations, and chronometers, bearing N. 55° E. from Cape Donda, distant 16 leagues, has 2 small isles close to it; and the land that forms it having a regular declivity, with a gap not far from the extremity, gives the cape an isolated appearance when first seen. To the eastward, betwixt it and Trees Cape, there is a projecting headland, with white cliffs fronting the sea.

The coast betwixt it and Cape Donda, forms a small concavity, and is mountainous at a small distance inland. To the eastward of Cape Rivers about 23 leagues, in the bay on the East side of Cape Candy, the river and village of Bool are situated; there is said to be anchorage and fresh water here, but some dangers project from the shore, and a rock with 3 fathoms water on it, on which an English ship struck.

Sailing directions along the Celebes side,

A ship proceeding along the coast of Celebes from Cape Mandhar to Cape Rivers, should keep at least 2 or 3 leagues off, in light winds, to prevent being drifted near the shore; but when beating to the northward against a steady wind and lee current, she ought to work near the coast in most places, particularly in the bay to the southward of Cape Temoel, where she will be out of the strength of the current.

and along the coast of Borneo.

THE BORNEO SIDE of the STRAIT, has generally been adopted by ships, until they have passed the Little Pater-Nosters: to proceed by this route, after having rounded the southeast part of Great Pulo Laut, the channel on either side of the Alike Islands may be chosen, as circumstances require, and a course should be steered from thence, toward Shoal Point. The best track between them with a working wind, is to stand out into 15 or 16 fathoms about 4 or 5 leagues off shore, and it may be approached to 7 or 8 fathoms, about 2 or 1½ league distant: the bottom is generally soft mud, but in some parts, overfalls may be got from 10 to 8 or 7 fathoms in the fair channel, about 4 or 5 leagues off shore.

Geo. site of Shoal Point.

SHOAL POINT, in lat. 2° 35′ S., lon. 116° 47′ E., by chronometer, and the mean of a series of lunar observations, bearing from the Three Alike Islands, N. 6° W. distant 22 leagues, is the southern extremity of a piece of woody level land, about 9 leagues in length. Close to the point, on the South side, there is a deep inlet or river; and another in lat. 2° 58′ S., having an island close to the point that separates it from Pulo Laut Strait. A reef projects from Shoal Point in a southerly direction, having some rocks and bushes above water; but the flat that fronts the point may be borrowed on with safety to 6 fathoms on the East side about 2 leagues distance, the bottom being soft, and the decrease of depth very gradual. Steering a direct course along the coast, the water shoals about 2 fathoms abreast of the point, and returns to the former depth when past it.

Geo. site of Ragged Point.

RAGGED POINT, or TANJONG ARES,* in lat. 2° 10′ S., lon. 116° 48′ E. by mean

* Called also Tanjong Lapar.

of many lunar observations, corroborated by chronometers, bears nearly North from Shoal Point 8½ leagues; the land fronting the sea between them, being level and moderately elevated, is terminated to the northward by Ragged Point, which is bluff, with some gaps among the trees, and surrounded by a reef: from hence, the coast takes a westerly direction, forming the great bay of Passier to the northward.

Shoals on this part of the coast.

Betwixt Shoal and Ragged Points, is the most intricate part of the strait, on account of several SHOALS contiguous to the passage, not well explored, nor easily avoided in the night; for the soundings are not sufficiently regular to guide a ship clear of the dangers.

On the southernmost of these shoals, the Henry Addington grounded on the 12th of November, 1805, in 3¼ fathoms coral, and the least water found on it was 2 fathoms coral rock, Shoal Point bearing N. W. ¼ N. distant 6 or 7 leagues. When abreast of this dangerous shoal, it is proper to keep within 4 leagues of the coast, and not bring Shoal Point to the westward of N. W. by N. or N. W. ½ N., until to the northward of the shoal, which seems to be in about lat. 2° 50′ S.

OTHER SHOALS, which lie in the offing, are 3 or 3½ leagues off shore, not easily discerned in fine weather; for although nearly dry at low water spring tides, they have sometimes from 3 to 9 and 12 feet water on them, because the tide rises here 7 or 8 feet at full and change of the moon. The Hercules examined 1 of these shoals with her boat, and found it composed of sand, coral, and stones, with from 3 to 9 feet water on it, and from 15 to 17 fathoms close to. This shoal bears from Ragged Point about S. 35° E. and N. 47° E. from Shoal Point, distant about 3½ leagues off shore; for when the shoal bore from S. 39° E. to S. 66° E. about ½ a mile distant, Ragged Point bore N. 33° W., and Shoal Point S. 47° W. It appeared like a *long mark* occasioned by the reflection of a cloud passing the sun.

TWO SHOALS, were seen in 1795, by the Bridgewater, True Briton, Woodford, and Albion, the southernmost of which, appears to be very near, or part of that examined by the Hercules; for they found it to bear S. 37° E. from Ragged Point, distant about 15½ miles, and from Shoal Point N. 41° E. about the same distance. The other shoal bore from Ragged Point S. 41° E., distant about 3½ leagues, and from Shoal Point N. 20° E.; no part of these shoals appeared above water at the time, but the sea broke upon them.

There seems to be another shoal, betwixt these and the shoal which the Henry Addington grounded on to the southward; for when Shoal Point bore W. S. W. ¼ S., and the low land near Ragged Point about N. W. off shore near 3 leagues, the Blenheim's boat had 15 feet rocks on a shoal bearing E. by N. from the ship.

Between the Little Pater Nosters and these shoals, there are TWO DRY SAND BANKS, bearing nearly E. by S. from those close to Ragged Point, with coral reefs near them, where the Resolution, Friendship, and other ships have grounded, which render the passage outside of these shoals very unsafe. H. M. S. Blenheim, and the fleet, by keeping too far in the offing between Great Pulo Laut and Ragged Point, got overfalls on coral banks, and saw several dangers, on 1 of which the Henry Addington grounded, as mentioned above, and the Blenheim narrowly escaped getting upon another.

Although several ships have passed outside of these shoals, without discerning any of them, there is, nevertheless, great risk in sailing here during the night, unless every precaution is taken to avoid the dangers; for the soundings in some places are irregular, and not a certain guide when the depths are more than 10 or 12 fathoms. Under these depths, the soundings are more regular toward the edge of the mud bank that stretches along the shore from Pulo Laut to Ragged Point; for in standing on it, the water shoals in most parts very gradually to 6, 5, or 4½ fathoms. Therefore, the best channel is within 2 leagues of the shore, inside of the shoals, in soundings from 8 to 13 fathoms; and when Ragged Point is

Channels that should be chosen to avoid them.

approached, the depth of 11 to 13 fathoms ought to be preserved, if a ship is under sail in the night, to avoid the outer shoals, and those adjoining to Ragged Point. This is the narrowest part of the channel, being bounded on the inside by 2 *small sand banks*, which are at a small distance from each other, and 2 or 3 miles distant from Ragged Point, the outermost bearing S. E. from the point. These 2 sand banks are probably covered in very high tides, but in passing, a small patch of white sand, above water, is generally visible on each of them. Working from Shoal Point to these sand banks, stand off to 13 or 14 fathoms in the day, and toward the shore to 7 or 6 fathoms: when near them, keep in 9 to 13 fathoms until abreast of Ragged Point, and do not deepen above 17 or 18 fathoms until 4 or 5 leagues to the N. Eastward of that point.

Geo. site of Little Pater Nosters.

LITTLE PATER NOSTERS, called by the Malays BALABALAKAN, (after the easternmost island,) consist of an extensive group of 13 small isles, with banks of coral and sand above and under water, scattered among, and around them. The southernmost isle is in about lat. 2° 50′ S., the N. Easternmost in lat. 2° 10′ S., lon. 117° 58′ E., and the N. Westernmost in lat. 2° 8′ S., lon. 117° 42′ E.,* or 54 miles East from Ragged Point by chronometers. On these 2 isles, there is said to be fresh water; they are all low with trees on them, and ought to be avoided, for they are dangerous to approach. The True Briton coming from the southward, got among them, and as the numerous shoals seemed to preclude any safe passage through, she was obliged to return by the track she entered, after a delay of several days.

The N. W. and Westernmost isles, ought not to be approached so near as to be discernible from the mast-head, for they are fronted by sand banks, with dangerous coral spits projecting out 7 or 8 leagues. Returning from China in the Anna, we made the N. E. isle in July, 1792, steered to the westward keeping 4 or 5 leagues off the isles, and got ground 34 to 14 fathoms coral rock, when the N. Westernmost isles were in sight from the top, bearing South. Continuing to steer westward for the coast of Borneo, we had great overfalls from 30 and 40 to 5 or 5½ fathoms, on the coral banks. When 2 of the N. Westernmost isles were in sight from the mast-head, bearing about S. E., 9 dry sand banks (with a few bushes on 2 of them) were seen bearing from South to S. E. by S., distant 7 or 8 miles; passed then over some spits of 5 and 5½ fathoms, the bright coral rocks under the bottom, having a dangerous appearance; and some of the patches were thought to have very little water on them.

At noon, observed the lat. 2° 6′ S., the land of Borneo visible from the deck, bearing W. by S. ½ S. when 2 of the westernmost isles in sight from the mast-head were on with the body of the sand banks, bearing about S. by E.; at this time, deepened to 40 fathoms, then no ground 50 fathoms. Steered 2 miles to the westward, and got ground 36 fathoms, the depth then regularly decreasing over a bottom of mud and gravel, to 20 fathoms when Ragged Point was seen from the mast-head bearing W. S. W. about 8 leagues.

The northernmost sand banks are in lat. 2° 7′ S. distant about 3 leagues to the westward of the nearest isle.

Directions for avoiding them.

To avoid these dangerous coral banks, a ship coming from the northward, ought not to cross the parallel of lat. 2° S. until she is well in with the coast of Borneo, in 20 or 18 fathoms. If leaving Ragged Point, she ought not to stand off shore to more than 20 or 22 fathoms until she is to the northward of the same parallel; and then, the strait is clear from side to side.

Passier River and Road.

PASSIER RIVER'S ENTRANCE, in about lat. 1° 54′ S., is situated near the bottom of the bay, about 6½ leagues N. Westward from Ragged Point; the anchorage is in 4½ or

* Captain Heywood, made the N. E. and N. W. isles in the same latitude, and exactly in the same longitude by chronometers.

.5 fathoms, 3 or 4 leagues off shore, to the northward of the river. There are some shoals in the South part of the bay, betwixt Ragged Point and the river, to avoid which, ships bound to Passier should get into the latitude of the anchorage before they approach near the shore, and steer West for it. The town is 6 or 7 leagues up the river, where supplies may be got in case of necessity, but small ships must be guarded against any attack, as several ships have been cut off at Passier and other parts of this strait.

At the N. W. part of the bay, is situated the wide entrance of Passier Lama, or Old Passier; and all the land is low and woody close to the sea, but hilly in the country

PAMAROONG ISLAND, or DONDREKIN, the South point is in lat. 0° 54′ S., lon. 117° 36′ E. by lunar observations and chronometers, bearing from Ragged Point about N. 32° E. distant 30 leagues; and it is the southern extremity of the *long low* island named as above, separated from the coast of Borneo by a narrow channel, appearing like the mouth of a river when viewed from southward. And Gooty town lies far inland from hence, already mentioned in a note at the beginning of this section. Geo. site of Pamaroong Island,

About mid-way betwixt Passier Bay and this place, the coast forms Baleekpappan Bay, and near the sea, is low and woody, with several detached mountains inland, 1 of which is called Baleekpappan Peak: along this part of the coast, the depths are 25 to 30 fathoms about 4 or 5 leagues off, decreasing gradually toward the shore.

From the South point, Pamaroong Island stretches about 10 leagues to the N. N. E. and northward, having several indentations or small inlets on its eastern side, and is fronted by a reef which surrounds the outer parts of the island. The depths decrease regularly over a muddy bottom to the edge of the reef, at the southern parts of the island; but to the northward, there is deep water near it. A DRY SAND BANK, in lat. 0° 52′ S., lies about 2 miles distant from the S. E. part of the island, on which the Betsey, and Experiment, grounded in the night. The fleet bound to China in 1799, anchored here on the 12th of December, and the boats found the depth decrease regularly to the sand bank, which may be approached occasionally to 10 or 12 fathoms. It extends N. E. by E. and S. W. by W. about ⅔ of a mile, but at high water spring tides, is not dry more than 50 yards across, for the water rises at those times 8 or 9 feet. Adjacent coast

The freshes from the rivers on this coast, carry large drifts of trees into the strait, which frequently appear at a considerable distance like vessels under sail, or small floating islands.

To the northward of Pamaroong Island, there are no soundings along the coast of Borneo, in the great bight between it and Point Kanneeoongan, except very close to the shore; and the coast in this part is seldom approached.

Having passed Ragged Point, steer toward the South end of Pamaroong Island, keeping along the coast in soundings of 16 or 18 fathoms, which will increase to 25 and 30 fathoms as you proceed to the northward, and the depths are 28 or 30 fathoms about 4 leagues off the South end of the Island. With a steady S. E. wind, you may keep farther out, to give a good birth to this island; for excepting the reef and sand bank contiguous to it, the strait is clear of danger from side to side, to the northward of lat. 2° 0′ S. To sail from Ragged Point to the northward.

TANJONG, (or POINT) KANNEEOONGAN, in about lat. 1° 5′ N., lon. 119° 10′ E., is the extremity of a narrow peninsula of high even land, which extends nearly 20 leagues eastward from the other land of Borneo; and the North entrance of the strait of Macassar, formed between it and Cape Donda, is about 17 leagues wide. Contiguous to the point there are 2 small isles, and another isle of middling height covered with trees, about 2½ leagues off the land, on the South side of the peninsula, having a safe channel betwixt it and the shore. No soundings are obtained here, nor within 1 or 2 miles of the coast to the South and westward of the point. A ship being on the South side of this peninsula, will experience no southerly current, when it is running strong into the strait; there being an eddy under it, similar to that under Cape Temoel on the opposite coast. Geo. site of Point Kanneeoongan. Circumjacent isles and coast.

To the N. W. of Point Kanneeoongan, about 3 leagues distant, there is a small isle with a conspicuous beach, and the Bomige or Harings Isles, in about lat. 1° 40′ N., bear about N. by W. ¾ W. from the point; these are 2 small isles, near, and on with each other, bearing W. 14° N. The large Island Maratua, or St. John's, is said to bear about N. by W. ½ W. from Point Kanneeoongan, extending from lat. 2° N. nearly on the meridian, to lat. 2° 24′ N. The Jason Snow, passed inside of it and the isles contiguous, in 1774, and found soundings near the coast of Borneo to the westward of Harings Isles, with several other isles and shoals fronting the coast: but the whole of the coast, embracing the great concavity between Point Kanneeoongan and Unsang, in which are several bays, with groups of small islands fronting it in some places, is little known to Europeans.

Currents.

CURRENTS, in the Strait of Macassar, run more frequently to the southward than in the opposite direction: from November to April, particularly in January, and February, the current runs with great strength in that direction, abating generally in March. During the southerly monsoon, from April to September, or October, there is frequently a weak current setting through to the southward, in opposition to the wind which then blows into the southern part of the strait from S. S. E. or S. Eastward. This southerly current, is not so prevalent at the North entrance of the strait; for a N. E. current is often experienced about Cape Donda or Cape Rivers, in the southerly monsoon, although the currents and winds may be considered variable during that season.

Some ships have experienced a current setting into the strait, on the East side of Pulo Laut, during the southerly monsoon; but ships which sail tolerably, seldom find much difficulty in working round the island in that season, for in general, the current is weak, and sometimes it runs to the southward.

In October, November, and December, the current sometimes sets through the strait to the northward, particularly in October; but it has been found in some years, to set southerly in November and December. October, is the best month for ships proceeding through the strait, when bound by the eastern passage to China; November and part of December, is also reckoned a favorable season; but the passage through this strait, ought never to be attempted in January or February, nor *probably* after the beginning or middle of December.

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## *DIRECTIONS for SAILING from the STRAIT of MACASSAR, between MINDANAO and CELEBES, into the PACIFIC OCEAN: COASTS, CHANNELS, and ISLANDS.*

Currents between Mindanao and Celebes.

THE CURRENT, runs mostly in, from the Pacific Ocean between Mindanao and Celebes, to the West or S. Westward, in both monsoons; but near the land, it changes at times and sets to the eastward, particularly near the North coast of Celebes, an easterly set is frequently experienced in October, or November, and sometimes in December.

Betwixt the easternmost of the Sooloo Islands, and the South end of Mindanao, the current is liable to great changes; when setting sometimes 2 miles per hour to the westward, it suddenly abates, and runs equally strong to the eastward; at other times, there is little or no current. Ships which steer from Cape Rivers for the South end of Mindanao, are generally delayed by light winds and calms when they approach the latter, and meeting a S. Westerly

General remarks for the passage to the eastward,

current about the Serangani Islands, they are frequently drifted to the southward as far as Sangir, or even to Siao, before they can get through any of the channels between the islands.

Those which endeavour to make a direct course from Cape Rivers to Sangir or Siao, and then proceed through any of the contiguous channels, will generally make their passage much quicker than the former. It was formerly the practice to approach the coast of Mindanao, in order to counteract the S. W. current, and to be enabled to give a good birth to the North end of Morty, with the prevailing N. E. winds: but there is seldom any difficulty experienced in getting round the North cape of Morty,* even in ships which pass to the southward of Siao; because, an eddy current sets sometimes out of the Molucca Passage to N. Eastward; whilst among the islands, adjacent to Mindanao, the current is running to S. Westward.

In September, October, November, and December, favorable passages have been made from Cape Rivers to Sangir and Siao, and from thence to the northward of Morty; and this tract seems preferable to the circuitous route by the coast of Mindanao.

NORTH COAST OF CELEBES, is in general high bold land, and in most parts, may be approached within a few miles, but ships ought to keep well out from it, unless they intend to touch at MANADO for refreshments. This is a bay, and village, in about lat. 1° 28′ N., situated on the West side of the N. E. end of Celebes, having a group of islands fronting it to the northward. There is anchorage in this bay, and the Dutch have a resident at the village, the natives being more hospitable here, than those are who inhabit the western coast. Rice is exported from Manado to the Molucca Islands, the adjacent country being cultivated with that grain.

Manado, on North coast of Celebes.

KEMA VILLAGE, in lat. 1° 22′ N., lon. 125° 19′ E. by chronometers, situated on the East side of Celebes, nearly opposite to Manado, has also good anchorage in the road, in 10 or 12 fathoms, with Mount Klobat bearing N. 36° W., and the Sisters N. 28° E. about a mile off shore; the depth from thence, gradually decreasing to the village, where good water and other refreshments may be procured. About 5 miles to the N. E. of Kema, lies the South entrance of the Strait of Limbe, where shelter from S. E. winds and good anchorage are found, when these winds blow into Kema Road. The tides rise 5 or 6 feet here, and contiguous to the N. E. part of Celebes.

Geo. site of Kema Village and Road.

STRAIT OF LIMBE, formed betwixt the Island Great Limbe, and the N. E. part of Celebes contiguous to it, is very narrow and intricate in the middle, with an island in that part encircled by a reef, which occasions an eddy or whirlpool; and the tides being very strong, renders the passage through the strait not advisable in a large vessel. Close on the West side of this strait, is situated the highest peak of the Sisters, which with the contiguous mountains, are very conspicuous in passing near the N. E. end of Celebes. The southernmost of these called Mount Klobat, may be seen about 30 leagues.

Strait of Limbe.

BANCA ISLAND, in about lat. 1° 52′ N., lon. 125° 24′ E., by the chronometers and lunar observations of Captain Heywood, corresponding with those of other navigators, fronts the N. E. point of Celebes, having other islands near it to the westward; and this group, is situated betwixt the North part of the strait of Limbe, and the islands that front Manado Bay. Banca is hilly, and of middling height, but 1 of the islands to the westward is flat table land, and another has a high peak on it; the latter is the northernmost of the group, off Ma-

Geo. site of Banca, the neighbouring islands, and contiguous channel.

* Indifferent sailing ships, have in some seasons been retarded 2 or 3 days in getting round, when brisk N. E. winds prevailed, with a considerable swell against them; others often get quickly round: the Sulivan passed to the southward of Siao, on the 11th of December, 1792, had an easterly current of 3° 16′ from Cape Donda, which continued till in lat. 6° N., lon. 135° E. on the 20th, being set in 9 days from Siao 4° 34′ to the eastward of account, or nearly 8° after leaving Cape Donda.

nado Bay. Betwixt the Celebes Shore and these islands, there is a safe channel called Banca Strait, leading from the North entrance of the Strait of Limbe to the anchorage in Manado Bay.

The extreme point of Celebes is called Cape Coffin, and the whole of the islands that stretch from it to Manado Bay, forming the Strait of Banca, are sometimes called Banca Islands.

Bejaren Island and channel adjoining.

BEJAREN ISLAND, in lat. 2° 6′ N., distant about 5 or 6 leagues N. Eastward from Banca, is of moderate height, terminating in a peak at the summit. The channel betwixt it and Banca, appears to be 4 or 5 leagues wide, safe for large ships; and it is the southernmost channel* amongst the chain of islands, situated between the N. E. end of Celebes and the South Point of Mindanao.

Geo. site of Tagolanda, and its contiguous channel.

TAGOLANDA ISLAND, in about lat. 2° 23′ N., lon. 125° 36′ E., bearing from the North part of Bejaren about N. ½ E. distant 4 or 5 leagues, has a high conical peak, and is of considerable extent; it is fronted by the Island Roang on the S. W. side, and by the low level Island Passig on the West side, which lie at a small distance.

The channel between Bejaren and Tagolanda is 2½ or 3 leagues wide, and clear of danger: the Hope passed through it in 1806, and other ships which have fallen to leeward of Tagolanda, have proceeded by it at various times. The North end of Tagolanda, is in about lat. 2° 27′ N.

Geo. site of Siao, the isles and channels adjoining.

SIAO, is an island of greater extent than Tagolanda, rendered very conspicuous by a high conical volcanic peak, situated in lat. 2° 43′ N., lon. 125° 35½′ E. by the chronometers and lunar observations of Capt. Heywood. At a short distance from the West side of Siao, lies the small island Makalara; and on the East side lies Mandang, with other contiguous isles, and some rocks project from the S. W. point of Mandang, betwixt which, and the S. E. point of Siao, there is an opening about a mile wide.

The S. E. point of Siao is in about lat. 2° 40′ N., bearing N. ¼ W. about 13 miles from the N. E. point of Tagolanda; the channel between them being 3 or 3½ leagues wide, and clear of danger, is much frequented by ships proceeding to the eastward.

Geo. site of Sangir.

SANGIR, or SANGUEY, bearing from Siao about N. by E. ½ E., distant 12 or 13 leagues, extending from lat. 3° 21′ N. nearly in a N. N. W. direction to lat. 3° 46′ N., is of moderate height at the southern part, but the land is formed of high mountains to the northward. There is said to be a harbour on the East side, formed by the adjoining small isles, several of which are at a considerable distance from Sangir; and contiguous to the southern part, there are other islands. The western side is indented by several small bays, with soundings from 40 to 60 fathoms, about 1 to 2 miles off shore; and it is clear of danger, but the bottom is mostly coral. There is a small river or watering place, in a bay situated in lat. 3° 28′ N., lon. 125° 44′ E. by chronometers and lunar observations; here, ships may anchor about a mile off shore, in from 50 to 60 fathoms with a light anchor, and procure poultry and vegetables from the natives of the adjacent habitations, the island being cultivated in many places.

Watering place, and anchorage.

The Royal Charlotte, anchored with the kedge in 58 fathoms, abreast of a village bearing N. 70° E., a piece of land like an island, but joined to the main island, N. 45° E., distant 1½ mile, a point of land N. 2° E., distant 3 or 4 miles, N. Western extreme N. 20° W., the point of an island off the South end of Sangir S. 36° E., and the body of the westernmost

* H. M. S. Imperieuse, with a convoy from Malacca Strait, bound to Amboina, worked through this channel in the night of the 9th of November, 1800, then proceeded through the Molucca Passage, and arrived on the 21st at Amboina.

Passage Island South, the watering river was then a little to the southward of the land resembling an island.*

The tides run to the northward and southward along this side of the island about 2 miles per hour, and rise 6 or 7 feet. Long boats should go into the river about ¼ flood, to get filled and clear of it before high water, for the ebb runs out quick, and will soon leave the boats aground.

KARAKITA, or PASSAGE ISLANDS, consist of 4 or 5 islands and several rocky islets, situated betwixt the South end of Sangir and Siao, which separate the channel into 2 branches. The westernmost Passage Island, or Karakita, is high, and the eastern 1, called Pala, projects out in a low point to the eastward; the channel betwixt these islands and the South end of Sangir, is 3 or 3½ leagues wide, clear of hidden danger, by keeping nearest to Karakita, as islets and rocks lie near the Sangir shore to the westward of its South point, not easily seen in the night. The channel betwixt the Passage Islands and Siao, is considered dangerous in the night: the fleet bound to China, steering through it on the 19th of November, 1807, when the weather cleared up at 11 P. M., saw the land a-head and on both bows, extending from N. N. E. to 4 rocky islets bearing E. S. E.; they then hauled off S. E. until close to Siao, and passed to the southward of the rocks about the distance of 1½ mile. These 4 rocks are situated about N. by E. from Siao, nearly mid-way between it and the nearest of the Passage Islands, 1 of which is called the Quoin. The North end of Siao must be borrowed on pretty close to avoid them, but the channel to the southward of that island, is preferable in the night. The David Scott, on the 4th of January, 1811, passed to the North of Siao in the night, within 2 miles of the southernmost Passage Island, and saw lights on them. Ships having approached Sangir, may either proceed to the North or southward of the island, as seems most eligible; if the latter route be pursued, they ought to haul close round the South end of Sangir, to be enabled with the N. E. wind, to weather the rocky islets bounding the South side of the channel, particularly as a S. W. current may often be expected.

Passage Islands and the channels described.

To sail betwixt the islands and Sangir.

The easternmost of these islands on the South side of the passage, called the Rabbit or Haycock, is 5 or 5½ leagues S. Eastward from the South end of Sangir, and nearly direct to the southward of the outer island that fronts the East side of Sangir. There are 8 small islets or rocks to the eastward of the Rabbit, and others to the westward; several of them are small spiral rocks, and some appear like Haycocks.

Rabbit and circumjacent rocks.

The Walsingham, on the 7th of December, 1793, fell to the southward of Karakita, and pushed through between the second and third islands to the southward of Sangir. At noon, observed lat. 3° 9′ N., Siao Peak bearing then S. 9° W., an island S. 63° W., another S. 4° W. to S. 23° E., one N. 37° E. to E. 4° S., one N. 25° E., one N. 8° W. to N. 16° W., Sangir North to N. N. E., and rocks a-head bearing E. S. E. ½ S., distant 3 or 4 leagues; the current setting strong to E. S. E. This seems an intricate narrow passage, which the Walsingham went through, and ought not to be chosen; for there being no soundings near these rocks or islands, a ship may be drifted upon some of them by the currents, during light airs or calms.

CHAIN OF SMALL ISLANDS, extending from the North end of Sangir in a northerly direction to the South end of Mindanao, have several safe channels among them.

Small isles between Sangir and Mindanao.

* The Royal Charlotte and Cuffnells, watered with their long boats in the river without difficulty, whilst they remained here, on the 17th and 18th of February, 1800. The Cuffnells anchored in 60 fathoms, with the mouth of the river bearing E. by N. 2 miles, distant about 1½ mile from the point that forms the North side of the bay. The Woodford, on the 26th of January, 1795, anchored here, and got plenty of poultry and fruit in exchange for coloured handkerchiefs, knives, &c., but she lost 11 casks in attempting to water; by which it appears, that there is a considerable surf beating on the shore at times.

Some of these, which front the North end and N. E. side of Sangir, are only islets or rocks high above water; and to the westward of an island that bears N. by W. about 4 or 5 leagues from Sangir, the Louisa Shoal is situated.

Louisa Shoal.

There is a good channel outside of the isles adjoining to the N. E. part of Sangir, but caution and a strict look out will be requisite in the night, when passing near or among any of these rocky islets. The northernmost isles of this chain, called Obtuse Cone, Flat Island, Broken Island, and Three Hill Island, are situated directly to the southward of the Serangani Islands, having a safe channel between them and the latter.

Geo. site of Serangani Islands.

SERANGANI ISLANDS, distant 4 or 5 leagues off the South point of Mindanao, called sometimes Serangani Point, consist of 2 considerable islands extending from lat. 5° 20′ to 5° 31′ N.; and the high peak on the westernmost, is in lon. 125° 32′ E. by chronometers, bearing about South from the South point of Mindanao. These 2 islands lie E. N. E. and W. S. W. of each other, and the easternmost, which is by much the lowest, has a hill on its South end: there are soundings on the N. E. side of the westernmost island, and also contiguous to the North end of the other, in the passage betwixt it and the small island Linitan; but none in the channel between them and Mindanao. Linitan is a small low island, distant about 3 miles to the northward of the eastern Serangani Island, and has a reef projecting from its North and South points a little way, and also to the eastward. The South point of Mindanao is in lat. 5° 39′ N.; the land fronting it being high and hilly, may be seen about 12 leagues; and the channel between it and those islands is 3 or 4 leagues wide, clear of hidden danger.* The tide flows here, till 7 hours on full and change of the moon, and rises 6 feet.

Mindanao South Point.

Captain J. Hunter, (now Admiral Hunter) anchored at the Serangani Islands in 1791, returning from Port Jackson; and the Waaksamheyd snow, in which he and the crew of H. M. S. Sirius were passengers, was assaulted by the natives, from a misundersanding between the master of the vessel and the Rajah of the place.†

Geo. site of the Tulour Islands.

TULOUR, or SALIBABOO ISLANDS, are of considerable size, and moderately elevated, being 3 in number, with some contiguous small isles. Kabruang, the southernmost island, has a peaked mount on it, and its South end is in lat. 3° 47′ N. lon. 126° 45′ E. by chronometers, bearing East from the North end of Sangir, distant about 22 leagues. Salibaboo or Lirog, situated to the N. W. of Kabruang, has on it a table hill; and on the East side, fronting Kabruang, the bay and road of Salibaboo is situated, having irregular soundings of 10 to 20 fathoms rocky bottom near the shore, and from 20 to 40 fathoms sand about 1 or 1½ mile off.

By a plan of these islands drawn by Captain W. Greig, who visited them during a trading voyage from Bengal, it appears that the small harbour at the bottom of Salibaboo Bay, called Leron Harbour by Captain Forrest, is called Salibaboo by the natives. Sailing in for the road by the South Channel, betwixt Kabruang and the point of Salibaboo, a birth must be given to a spit that projects a large ½ mile from the shore, about half way

* H. M. ships La Sybille and Fox, from Samboangan and Bongo Bay, bound to Macao, beat through the channel between Mindanao and the Serangani Islands, during the day and night of the 13th of February, 1798; and got no soundings, although they stood pretty close to the shore on both sides of the channel.

Capt. Waterman, in the ship, Volunteer, touched at the Serangani Islands on the 19th of June, 1813, and found a lagoon of rain water on the westernmost island, where they filled up, but it was rather brackish; a small well of good water was found on the eastern island, where they filled 2 casks, and procured plenty of firewood. The Volunteer, appears to have passed between the islands, as Capt. Waterman recommends to avoid the West side in going through, because that shore is lined by a shoal in the narrowest part, projecting out nearly to mid-channel; but the eastern side of the passage, is safe.

† The inhabitants of these, and the other islands near the coast of Mindanao, are of a hostile, and treacherous disposition.

betwixt the point and harbour, on which the water shoals from 7 to 3 fathoms. The harbour is easily known by the houses and cocoanut trees, but *seems* not adapted for large vessels: the best anchorage in the road, is from 15 to 30 fathoms sandy bottom, about a mile off shore; for farther in, the bottom is rocky in some places.

From the N. E. point of the island, a spit projects, with 30 or 33 fathoms near it; which depths continue round the point, close along the North side of the island to the village called Leron by the natives, situated 1½ or 2 miles to the N. Westward of that point, and fronting the South end of Tulour. There are 2 small islands off this village, where it is *said*, ships may anchor in safety betwixt them and the village; but *probably* this is an anchorage too confined for large ships, except in a case of necessity. Although these islands are in possession of the Dutch, at the village of Leron a ship may get supplied with hogs, goats, fowls, sweet potatoes, cocoanuts, &c. at a very cheap rate. The natives seem very civil, and prefer old iron, coarse red handkerchiefs, and coarse white cloth, to dollars. The natives of Karkalang seem also friendly, where vegetables and other refreshments may be procured; and there is a safe channel betwixt it and the other islands to the N. Eastward.

Tulour or Karkalang, the largest and northernmost island, extends nearly 9 leagues North and South, or from lat. 4° 0′ to about lat. 4° 25′ N., and with the others is inhabited. In about lat. 4° 10′ N., and 8 or 9 leagues to the westward of Karkalang, there is said to be some rocks, seen in 1788, by the Iphigenia.

Northumberland Shoal.

NORTHUMBERLAND SHOAL, situated to the S. Eastward of the island Kabruang, is in the track of ships which approach the South end of this island, after having rounded the North end of Sangir. The Northumberland, Captain Rees, with the fleet bound to China, saw this shoal on the 31st of January, 1796, at 4 P. M.; the breakers bearing then from S. 70° E. to S. 87° E. distant 4 or 5 miles, and the South point of Kabruang N. 27° E. about 7 or 8 miles. On the middle of the breakers, a small patch of sand appeared above water, and the extent of the shoal is about 2 miles N. N. W. and S. S. E., bearing from the South point of Kabruang S. 14° E., distant 10 or 11 miles. The journal of the Warren Hastings in company, states the shoal to be only 2 or 3 leagues distant from the South point of Kabruang; but Captain Greig says, it is about 12 miles distance, in a S. E. direction from the peak. He rounded the South end of Kabruang at the distance ½ a mile; and the Glatton passed betwixt the island and shoal in the night, without knowing of its existence!

Meangis Islands.

MEANGIS, or MENANGUS, in about lat. 5° N., distant 12 or 14 leagues N. Eastward of the Tulour Islands, consist of a group of 3 considerable islands of moderate height, with some smaller ones adjoining, being the easternmost of those that lie to the southward of Mindanao. There is said to be soundings amongst the largest islands in the narrow channels by which they are separated, and cloves growing on them; but they are little known to English navigators. As there is a small isle to the northward, and others betwixt this group and the Tulour Islands, exclusive of another high island in lat. 5° 33′ N. by the account of Captain Hunter, said to be distant about 12 leagues to the eastward of the latter, a good look out is therefore indispensible in these parts, for the number and situations of the islands are not correctly known. At 6 P. M. on the 22d of June, 1813, the Volunteer passed the Meangis Islands bearing S. by E. about 6 leagues, same time, a high rock or isle like a haycock bore N. by W., but no other islands were seen in steering to the eastward.

Geo. site of Cape St. Augustine.

CAPE ST. AUGUSTINE, the S. E. extremity of Mindanao, appears to be in about lat. 6° 4′ N. lon. about 126° 48′ E.; and from thence northward, the East coast of that island is little frequented. There are some bays and harbours on this part of the coast, 1 of

which is about 16 leagues from the cape, with anchorage in it, but the inhabitants are inhospitable to strangers.

The island St. John's, situated between lat. 7° and 8° 21′ N., contiguous to the East coast of Mindanao, is of considerable size and height.*

Bays on the South coast of Mindanao.

On the South coast, between the S. E. end of Mindanao, and the South point, the large bay of Tagloc is formed; and at the bottom of the great concavity on the S. W. side, betwixt the South point and the strait of Baseelan, lies Bongo Bay, where on the East side, the river and town of Mindanao are situated in about lat. 7° 10′ N. lon. 124° 35′ E. The anchorage is about 1 or 2 miles off the river, in 10 to 15 fathoms sand, to the S. E. of Bunwoot or Bongo Island; and the town of Mindanao is about 2 miles up the river, which is narrow, with 10 or 11 feet on the bar, at high water spring tides. Pollock Cove, about 3 leagues farther to the northward, is a good harbour, where fresh water may be procured; but the inhabitants here, and those of the adjacent coast, seem to be independent of the Rajah of Mindanao, and being a treacherous race, must be carefully watched. Boats landing at any of these places, should be well armed, and the people kept together, constantly on their guard.†

Geo. site of the town.

Caution requisite when ships stop on this coast.

The depths in the entrance and middle of Pollock Cove, are from 45 to 30 fathoms, decreasing to 20 and 15 fathoms near the southern shore, to the eastward of the reef that surrounds the point. On the West side of Bongo Bay, several rivers fall into the sea.

There are other small bays or harbours on the South coast of Mindanao, one of which, called Kamaladan, is situated to the westward of the West point of Bongo Bay, near to the N. E. end of Pulo Lutangan, which is a considerable island contiguous to the coast. Sugud-Boyan Bay, to the N. Westward of the Serangani Islands, stretches a great way inland, having anchorage of 15 or 20 fathoms on the S. W. side, with some streams of water descending from the hills on the East side; and there are plains of long grass on the West side of this bay, abounding with deer. To the eastward, there is a very high conical mountain in about lat. 6° N., discernible from a great distance at sea. The inhabitants of this coast, and those of the principal islands of the Sangir Chain, subsist chiefly upon sago, fish, and fruits; but rice, sugar cane, and pepper, are cultivated in some places, in small quantities. A ship in want of provisions, will seldom be able to procure a sufficient supply: poultry, hogs, and goats, may be got at some of the islands; but it is thought, that bullocks and rice, are only to be had in sufficient quantity at Sooloo.

Directions for sailing to the eastward between the island.

A ship from Baseelan Strait, bound into the Pacific Ocean, may steer a direct course for the Serangani Islands, if the wind is favorable, and pass betwixt them and Mindanao, or to the southward of them, as circumstances require. From hence, she may steer out between the Meangis and Tulour Islands, to be able to clear the North cape of Morty with N. Easterly winds; but if any difficulty appears in pursuing this route, she may pass betwixt the Tulour Islands and Sangir, and then haul up to the eastward.

Ships from the strait of Macassar, having passed through the channel betwixt Siao and Tagolanda, or through any of those contiguous to Sangir, should steer to the eastward, to give a birth to the North end of Morty; and to effect this purpose, those ships which have passed through any of the channels to the southward of Siao, ought to haul to N. Eastward if the winds permit. Should N. E. winds prevail, with a current setting to the southward, it will be found difficult to prevent getting sight of the North part of Gillolo and Morty, or even perhaps of the 2 Islands Meyo and Tyfore, situated in the North entrance of the

* Captain Hunter states the North end of St. John's Island to be in lat. 9° 30′ N. lon. 126° 32′ E.

† In February, 1798, H. M. frigates Fox and La Sybille, touched at Pollock Cove for water, where it is procured with greater facility than from Mindanao River. The inhabitants pretended friendship and assistance, but finding the La Sybille's boat's crew unarmed, they attacked and killed 3 of them; the rest, after being in captivity about a year, were ransomed by the humanity of Captain Lynch, (who touched at Mindanao in a trading voyage to the eastward) and carried by him to Amboina.

Molucca Passage: but here, the southerly current generally abates, and a northerly one is often experienced setting out along the West coast of Gillolo. It is, however, prudent, to give a good birth to the northern extremities of that island and Morty, when it can be done without much loss of time, for the current sometimes sets to the southward in the vicinity of those islands;* and there is a swell generally from N. Eastward.

MORTY, or MORTAY, the North Cape, in lat. 2° 44′ N., lon. 128° 25′ E. by chronometer from Siao, is the northern extremity of the island of that name, which slopes down from the high table land, into a point that forms the cape. This island extends 12 or 13 leagues to the southward, the land is mostly high, of an even appearance; and the North coast about the cape, is lined by a reef projecting 1 or 2 miles out, having no soundings close to, with some small isles adjoining. The Island Riow, is situated at a small distance from the West coast, betwixt which and the North end of Gillolo, is formed the North entrance of Morty Strait. In 1808, there was little or no variation among the islands betwixt Mindanao and Celebes. In the bay betwixt the N. E. part of Riow and Morty, there is *said* to be anchorage; with fresh water, plenty of wild hogs, deer, wood-pigeons, &c. on the islands contiguous. Geo. site of Morty North Cape.

GILLOLO, is high bold land, with 3 high remarkable peaks, discernible when off the N. W. part of the island: the North end is in about lat. 2° 23′ N., having several isles fronting it on the West side, called the Talenading Islands, which are of moderate height. Gillolo.

MEYO, in lat. 1° 12′ N., lon. 126° 39′ E. by chronometer from Siao, is a high island of even appearance, situated in the North entrance of the Molucco Passage, between Gillolo and the N. Eastern extremity of Celebes; and the Island Tyfore is situated in lat. 0° 58′ N., lon. 126° 27′ E., distant about 6 leagues to the S. W. of Meyo. Geo. site of Meyo, and Tyfore.

Ships having rounded the North Cape of Morty, ought not to exceed lat. 4° N. until they have made sufficient easting with the westerly or variable winds, to be expected in low latitudes; for in lat. 4° to 6° N., the verge of the N. E. monsoon will be approached, where it may be tedious getting to the eastward: in this track, care must be taken to avoid the low islands, or dangers, described in 1 of the following sections. Early in this season, it is advisable, (particularly in an indifferent sailing ship) to make easting sufficient to pass outside of the Pelew Islands, or at least to make the southernmost island, then proceed along the West side of them; for strong N. E. winds, with a westerly current, generally prevailing in the track between these islands and the North end of Luconia, in November, December, and January, would render it unpleasant to fall to leeward near the coast. It is, therefore, prudent, to keep well to the eastward in this season, until certain of being able to weather the North end of Luconia, and the Babuyanes Islands; which having approached, any of the channels adjoining to those islands may be chosen, as circumstances require. Late in February, or in March, it is not necessary to make so much easting, for in these months, you may pass to the westward of the Pellew Islands with safety; because the N. East winds are not so violent, nor the westerly currents so strong. Directions for the passage into the Pacific Ocean.

* The Panther was carried into Morty Strait by the current during light winds, then passed through betwixt that island and Gillolo to the southward, and got no soundings whilst drifting through the strait; but the current generally sets through the Molucca Passage to the N. Eastward, during the greatest part of the year.

# *DIRECTIONS for SAILING from the STRAIT of MACASSAR to the WESTWARD of the PHILIPPINE ISLANDS.*

## CHANNELS, DANGERS, AND HEADLANDS ADJOINING.

Macassar Strait ought to be chosen late in the season.

SHIPS bound to CHINA, may be considered too late for the Pitt's Passage, if they do not reach Pulo Laut before the 1st of March; in such case, they ought to proceed through the strait of Macassar, and along the West sides of the Philippine Islands, because the season is then too far advanced for the route by the Pacific Ocean.

To sail from it toward Baseelan,

Being off Cape Donda in March or April, a course should be steered for the East end of Baseelan, observing to keep well to the eastward when the winds permit, to prevent being carried among the islands to the S. W. of Sooloo; for in this season, westerly currents and light easterly winds, greatly prevail betwixt Cape Donda and Baseelan. In case of falling to leeward, there are safe channels among the islands to the eastward of Sooloo; but as they are little frequented, it may be advisable to send a boat a-head to sound, when passing through any of them.

and through amongst the Sooloo Islands.

If a ship can only fetch Sooloo, she may pass round the West end of that island to the road, then steer from the North side of it, about N. N. E. toward the Sangboy Islands, giving a birth to Takoot Paboonoowan Shoal; which has been described under the article Sooloo, in 1 of the preceding sections. In proceeding by this route to the westward of the Sangboys, it may be prudent to continue a boat a-head sounding, for the dangers bounding it on each side, are not well known.

GRIFFIN ROCKS, where the ship of this name was wrecked, situated N. by E. about 2 leagues from the small Island Salleeolakit, and 2½ or 3 leagues to the westward of the Sangboys, must have a birth to the eastward, for the sea does not always break on them. To the S. Eastward of Salleeolakit about 2 leagues distant, there is another rock called Bato Balow. The breakers seen by the fleet on the 26th of June, 1795, were probably on this rock, or on some neighbouring danger; there being several shoals near the small islands, to the westward of the Peelas and Sangboys. This fleet, bound from China to England, came through the Mindora Sea, passed to the westward of the Sangboys, Peelas, and adjacent islands, and watered at Toolyan Bay, on the N. E. side of Sooloo. When passing the breakers at 5 miles distance in the Woodford, they were on with the South extreme of Baseelan bearing E. ¼ N.; when on with the North extreme of Baseelan, they bore E. N. E. ¼ N.; and were on with the North extreme of Peelas, bearing N. E. by N., a small isle then bearing N. by E. ½ E., probably Salleeolakit.

Exclusive of these dangers on the East side of the channel, there are several coral shoals on the edge of soundings to the westward, not well known, making it prudent not to borrow on that side above 7 leagues to the W. S. W. of the Sangboys; nor ought these islands to be approached under 4 or 5 leagues until they bear about East, when a ship will be clear to the northward of the Griffin Rocks.

Should the wind be at N. Westward after a ship is round the West end of Sooloo, she may steer to the E. N. E. and N. E., and proceed through the Peelas Channel; which route seems preferable to that last described.

Geo. site of the East end of Baseelan;

BASEELAN ISLAND, is high, and extensive, separated from the S. W. end of Minda-

nao by a good channel, called the STRAIT OF BASEELAN. The eastern extremity of the island, is in lat. 6° 30′ N., lon. 122° 30′ E. by mean of a series of lunar observations; and if the winds are favorable for approaching it, push through the strait betwixt Baseelan and Mindanao, which is the shortest passage.*

In the East entrance of this strait, lie 3 islands, the southernmost of which, called Manalipa or Coco Island, is low, and distant about 5 miles off the Baseelan shore. The other called Sibago, bearing about N. W. by W. from the former, is high, with low land projecting from the hill; and near it to the eastward, is situated the third island, with low land projecting from its high hill. These 2 islands being near each other, appear as 1 Saddle Island when viewed in some bearings. and sailing directions.

Should a ship happen to be in the morning, near the small low Island Tabtaboon, situated to the eastward of Samboangan, she will sometimes get a land breeze off the Mindanao shore, which may probably carry her through the strait before night, if the tide be favorable; but the winds are often light and variable at North and westward. The coast of Mindanao may be approached pretty close, the bank that lines it being steep to, and projects only to a small distance: there is no danger in the eastern part of the strait, and there are soundings along the Baseelan side, of various depths from 10 to 35 fathoms, where a ship may anchor occasionally, if she pass betwixt the Island Manalipa and Baseelan. There is a large concavity a little within the N. E. point of Baseelan, where the depths decrease from 20, to 11 and 10 fathoms coarse sand and rotten coral, toward the Baseelan shore, favorable for anchoring to stop tide; and in some places, the bottom is fine sand to the northward of the islands. On the S. E. side of Baseelan, there appear to be no soundings unless very near the shore: within 1½ cable's length of the *long low island* that fronts it, nearly mid-way betwixt the eastern part of Baseelan and the Island Boobooan, our boat could get no bottom with 60 fathoms of line; and about a ship's length from it, she got 18 fathoms rocky bottom.

The Laurel after rounding the East point of Baseelan, steered into the strait, along that shore to the N. Westward, in soundings of 35 to 25 fathoms; and had from 30 to 14 fathoms in working through betwixt Manalipa and Baseelan, where she anchored part of the night.

SAMBOANGAN, in lat. 6° 43′ N., lon. 122° 14′ E. by lunar observations and chronometers, is a small Spanish settlement on the Mindanao shore, at the North side of the strait, where water and refreshments may be procured. When at anchor in the road, Baseelan bore from S. 44° E. to S. 47° W., Manalipa and Sibago nearly in one S. 63½° E., the high spire of Samboangan E. 4½° N. distant ½ a mile. This place is protected by a fort regularly built, and well mounted with ordinance. There is little, or no variation here at present. Geo. site of Samboangan. Anchorage.

SANTA CRUZ ISLANDS, 2 in number, are small, situated 4 or 5 miles to the S. Westward of Samboangan. By keeping along the Mindanao shore, there is a safe passage; but there is said to be great overfalls, with a bank of 4 fathoms coral rock, to the northward of these islands. A bank of coral rock, projects also from Santa Cruz Islands to the S. Westward, on which H. M. S. La Sybille grounded in January, 1798. Ships which adopt the large channel betwixt these islands and Baseelan, must give a birth in passing, by not borrowing too close to the islands. To the westward of the Santa Cruz Islands, the strait is clear from side to side, with soundings of 20 fathoms about 2 miles from the Mindanao shore, deepening to 40 fathoms no ground in the offing. Santa Cruz Islands, and contiguous shoals.

* Ships are liable to experience strong currents at times near Baseelan. In March, we had in the Anna, a very strong easterly current for 2 days, then it suddenly changed and set to the westward, by which we were drifted to the southward of the island, and obliged to pass round it on that side. Departing from Baseelan in July, for Macassar Strait, we were set 73 miles to the eastward, and 30 miles to the northward in 2 days by the current, which then changed suddenly, and set to the westward about 30 miles daily until we reached Cape Rivers. There are irregular tides in Baseelan Strait, sometimes weak, at other times strong.

Caldera. A little inside of the S. W. point of Mindanao, which bounds the West entrance of the strait, there is a place called Dumalan, with the small settlement of Caldera, where fresh water may be procured. Although the soundings found in Baseelan Strait are very irregular, with rocky bottom in many places, there is no known dangers, excepting those adjoining to the Santa Cruz Islands, mentioned above.

Channels to the southward of Baseelan. CHANNELS SOUTH OF BASEELAN, appear to be safe, some of which may be chosen, when the winds or currents are unfavorable for proceeding to the northward through Baseelan Strait. There are safe passages betwixt some of the islands to the westward of Belawn, but they are not frequented; a ship proceeding through any of them, must take care of Takoot Saanga, a coral shoal distant about 5 miles E. S. Eastward from the Duo Bolod.

The channel betwixt the southern coast of Baseelan and the islands in the offing, is very safe, the least water said to be 9 or 10 fathoms; but it is not so wide as the Tapeantana Channel, which is the next to the southward, and generally frequented.

High Rock. Approaching the islands to the eastward of Sooloo, care is requisite in the night, on account of a High Pyramidal Rock, situated about 8 or 10 leagues S. Eastward from the East end of Sooloo, and about 40 miles East of Sooloo town by chronometers.

Tapeantana Channel. TAPEANTANA CHANNEL, bounded on the North side by the island of this name and Lanawan, and by the Islands Belawn and Tattaran to the southward, is 2½ leagues wide in the narrowest part between Lanawan and Tattaran; but nearly 5 leagues wide at the entrance, betwixt the eastern part of Belawn and Tapeantana.

Geo. site of Tapeantana, Islands adjoining. TAPEANTANA ISLAND, has a regular peaked high mount on the western part, with low land stretching out to the eastward; the S. E. point is in lat. 6° 14½′ N., lon. 122° 8′ E.* by lunar observations, taken by Captain Heywood and myself, corresponding within 2 miles of each other. Boobooan Island, situated a little to the northward of Tapeantana, is very like it, having a mount of similar shape. Close to the eastward of these, there are some low isles, the largest of which, lies off the East side of Boobooan; and a reef projects from the North part of Tapeantana, toward these low isles.

Belawn, and adjacent islets. BELAWN,† the outermost island on the South side of the channel, is the largest of these islands; having a high round mount on its western part, with a long space of low level land, extending several miles to the eastward. The East point of this island is in lat. 6° 0′ N., bearing nearly South from the East point of Tapeantana. Near the North part of Belawn, to the eastward of Tattaran, there are 2 small islets called Dipoolool; and about 2 miles off the N. W. end of Tattaran, lies a rock above water.

Tattaran and Lanawan. TATTARAN, and LANAWAN, are 2 small islands of middling height; and until the West end of the latter bears North, there are no soundings in coming from the eastward into the channel. When the current or ebb tide is running to the eastward, a ridge or line of strong ripplings appear sometimes like breakers, occasioned by the stream falling off the edge of the bank into deep water. When soundings are got on the steep edge of the bank, the water shoals immediately to 10 or 9 fathoms, soft bottom; and we found no less in the channel. In the South side of it, toward Tattaran, the water is much deeper; but the bottom there is not so even, nor so soft as in the northern side near Lanawan, which island is about 3 miles to the westward of Tapeantana.

Soundings.

* The chronometers made it a little more to the westward, by admeasurement from Cape Donda.

† The fishermen, wished to carry the Anna to the island, where they said we could anchor off a large village, and be supplied with good water, and refreshments: but some of the principal men of the place, who came on board, seemed to have sinister intentions.

TAMOOK ISLAND, in lat. 6° 28′ N., lon. 121° 56′ E. by lunar observations and chronometers, distant 4 or 5 leagues N. Westward from Lanawan, is rather low: the fair channel is between it and the Duo Bolod, which are 2 remarkable hummocks about 4 leagues westward from Tattaran. Geo. site of Tamook. Duo Bolod.

When a few miles to the westward of Lanawan the depths increase, which from thence to the South point of Mataha, are irregular from 25 to 40 fathoms; but from 30 to 35 fathoms, are the common soundings in the fair track. The bottom is fit for anchorage, consisting of sand and gravel, mixed with coral in some places: near the South side of Tamook, there are coral overfalls, and the depths less, than at 4 or 5 miles distance. Anchorage in the channel.

The tides in the channel to the southward of Tamook, set nearly N. W. and S. E.; the ebb to the S. Eastward, strongest in the S. W. monsoon, about 2½ and 2 miles per hour on the springs. This seems also to be the case in the opposite season, for in March, we had the tide setting from 1 to 2 miles per hour to the S. Eastward, and only a short slack when the flood ought to have been running to N. Westward. Having calms and faint variable airs at this time, we were obliged frequently to remain at anchor, and were 8 days from entering the Tapeantana Channel, until we cleared the islands to the N. W. of Baseelan. Tides.

MATAHA SOUTH POINT, in lat. 6° 32′ N., lon. 121° 50′ E. by chronometers, distant about 2 leagues N. W. by W. from Tamook, forms the eastern boundary of the entrance of Peelas Channel, which is bounded by the Island Peelas on the West side. Mataha, and the other islands betwixt it and Baseelan, are low and woody. Geo. site of Mataha.

PEELAS, is the largest of the islands that lie near Baseelan, being about 2 leagues in length North and South, all low level land, excepting on the North part where stands 2 hills: contiguous to its eastern shore, there is a small isle called Tagowloo. Peelas.

BALLOOK BALLOOK, in lon. 121° 50′ E. bearing North from Mataha, is a considerable island, having a sloping hill at the North part, with low land to the southward; and with Mataha, it forms the East side of the Peelas Channel, which is 4 or 5 miles wide, and very safe. This channel extends North and South, the tides in it appear regular, and pretty strong during the springs: the soundings are irregular from 25 to 35 or 40 fathoms, and off the South end of Mataha, there is 16 or 18 fathoms. About mid-way between Mataha and Ballook Ballook, there is said to be a rock or danger, in a direct line joining them. Ballook Ballook and Peelas Channel.

Having passed Tamook, keep nearest to Mataha in entering the Peelas Channel, to avoid some shoal coral patches that lie off the South end of the Island Peelas, on 1 of which, the Neptune's boat, in June, 1801, had only 4 fathoms. When through the Peelas Channel, the fair track is directly to the northward, on the East sides of the Islands Sangboys and Teynga, which are safe to approach; and there is a passage with 8 and 10 fathoms water between them. With a working wind, you ought not to stand near the N. W. part of Baseelan, to the eastward of Ballook Ballook, for the Mentor grounded on a shoal in this situation; to avoid which, ships that sail through the Inner Channel between the southern coast of Baseelan and the islands, should steer from the West point of Baseelan to the N. Westward, and borrow toward the N. E. side of Ballook Ballook in passing. To sail through it; or by the Inner Channel.

SANGBOY'S, in lat. 6° 48½′ N.,* distant about 2½ leagues to the northward of the North extremity of Peelas, are 2 high islands close to each other, called sometimes the Hare's Ears. The hill on the South or Great Sangboy, resembles a dome, and from it projects out some low land. Sangboy's.

* Observations in H. M. S. Belliqueux, in July, 1807, made these islands several miles farther North. Capt. Torin of the Coutts, also, made all the islands from Mataha to Teynga, about 4 miles farther North than the latitude stated above.

Geo. site of Teynga.

TEYNGA, in lat. 6° 52′ N., lon. 121° 43′ E. by chronometers, distant about 4 miles to the N. Eastward of the North Sangboy, and on the meridian of the North end of Peelas, is small, very low, covered with trees, and it is the northernmost island of the Sooloo Archipelago: a reef projects from its southern part a little way, and from the northern part of the island, a rocky shoal extends a great distance to N. Eastward, on the extremity of which, the soundings decrease regularly from 15 to 7 fathoms; and from hence, soundings stretch across to the S. W. part of Mindanao and strait of Baseelan. All these islands abound with wood, but excepting Belawn, they appear to be destitute of good water in the dry season, according to the statement of the fishermen. Our boat could find no water on Tattaran, nor on Tamook, in March, but there is said to be some on the latter island during the rains in the S. W. monsoon.

These islands destitute of good water.

Maloza River.

MALOZA RIVER, situated on the S. W. side of Baseelan, in the eastern side of Maloza Bay, bears about N. N. E. from Tamook. The S. E. point of the bay has a tope of tall trees on it, with 2 small islands opposite, 1 of which called Gowenen is high, but not distinguished from the offing, being close to the shore of Baseelan. A ship intending to water at Maloza, may anchor near this island, the direct passage for boats going to the river, being betwixt the S. E. point of the bay and the Island Gowenen. The mouth of the river is fronted by a shoal bar, over which a loaded long boat can only pass at high water; and we found here, but 1 flood during 24 hours, high water with the moon on the meridian. The village of Maloza is about a mile up the river, the entrance of which being narrow, is not discernible until close to it; and the trees from each side joining together, and forming a canopy over it, makes the aspect very gloomy within.

This river is not a good watering place, for vessels not well armed; there are many obstructions from trees which have fallen into the river, and it becomes so narrow a little way in, that there is not room to row the oars. If a ship is obliged to water here, 2 boats ought to be sent together if possible, well armed; and when the water is observed to be fresh, they ought not to proceed higher, for it is not advisable to go up to the village of Maloza, owing to the perfidy of the natives*.

To sail to the northward along the coast of Mindanao.

Having proceeded about 4 leagues to the North of the Island Teynga, you will have no more soundings in passing along the West coast of Mindanao, which is all bold high land, steep to, and should be coasted within a convenient distance. The winds here, in the N. E. monsoon, will be found light and variable from northward; but when brisk, they generally prevail between N. E. and East.

In lat. 7° 25′ N., about 7 leagues to the northward of the S. W. part of Mindanao, called Alimpapan Point, the Revenge watered in a small bight; but the shore was so steep, that she nearly tailed on the rocks, when in anchoring ground. Port Maria, is said to lie 4 or 5 leagues farther to the northward, having 30 fathoms water in the entrance, decreasing to 8 or 10 fathoms inside, where fresh water may be got, and shelter from all winds but those that blow at N. W. and Westward, but it is little known to English navigators.

Port Maria.

Geo. site of Point Balagonan.

POINT BALAGONAN, in lat. 7° 51′ N., lon. 122° 24′ E. by lunar observations, is a

* In March, 1793, the Anna's long boat made 3 trips to this river for water, and twice went up to the village; the inhabitants seemed very friendly, and the fisherman we had as guide, endeavoured to persuade us to land, assuring us that we would be well treated at the village, that there were only women and children in it, the men being out fishing. This *apparently* seemed to be the case, for few men were seen, but plenty of women came to the boat with fowls, &c. to barter with the crew for handkerchiefs, knives, and trinkets. I, however, discovered from 1 of the boats crew, who had laded and understood the language, that there were more than 100 armed men concealed behind the bushes, and he overheard 2 persons appoint the time when an attack was to be made on the boat. But fortunately their design was frustrated, for like true assassins, they had not courage to make the attack, because 3 Europeans in the boat, kept arms constantly in their hands. The ship Gloucester, of Bombay, about 3 years after, had 2 boats cut off, in attempting to water at this inhospitable place.

projecting headland, sloping down into the sea; and Point Gorda, in lat. 8° 1′ N., distant about 5 leagues N. Eastward from it, terminates in a small hummock. The coast of Mindanao, trends from thence E. N. Eastward to Point Galera, which is the western extremity of Sindangan Bay.

Directions for sailing along the West sides of the Philippine Islands.

The passage from Baseelan to the northward, along the West sides of the Philippine Islands, may be performod at any time of the year in ships which sail well, by keeping aboard the West coast of Mindanao, Negroes Island, Panay, Mindora, and Luconia. In October and part of November, the winds are often at S. W. and southward; and although they prevail from the northward, during the strength of the N. E. monsoon from November to April; yet, under the West sides of the islands, light variable winds are sometimes experienced, or land and sea breezes when close in with the shore. In the opening betwixt Mindanao and Negroes Island, and betwixt Panay and Mindora, brisk N. E. winds generally prevail, with a strong current setting through these guts to the westward; although there is seldom any current of consequence under the lee of the large islands. It is, therefore, prudent to take every precaution in crossing those openings, not to fall to leeward; because, it would be unpleasant to be drifted off to the Cagayanes Islands, where some dangers are said to exist, and considerable delay might follow, in regaining the windward shore.

Being abreast of Point Balagonan with a steady S. W. or southerly wind, steer a direct course for Point Naso, keeping rather a little to the eastward; if the winds are unsettled, light, and variable, keep along the coast of Mindanao to Point Galera, or thereabout, prior to stretching off from that coast for Point Naso; and in crossing, you should endeavour to approach the West coast of Negroes Island.

Negroes Island.

BUGLAS, or NEGROES ISLAND, is high bold land on the West side, and seems safe to approach. From Point Siaton the southern extremity of the island, in about lat. 9° 2′ N., the West coast stretches nearly N. W. by N. to Point Sojoton in about lat. 9° 50′ N., then taking a N. Easterly direction, a wide opening is formed between it and the South part of Panay. To the northward of Point Siaton, the coast forms a large bay, having a small low island in it, where there is anchorage in 13 fathoms ouze, in about lat. 9° 15′ N.

Cagayanes Islands;

CAGAYANES ISLANDS, bounding the West side of the passage, consist of 2 low woody islands of considerable size, the largest to the westward, and the narrow space between them is filled with islets and rocks. They are surrounded by a reef, which projects a great way out from their northern extremity: detached from the easternmost island at 1 or 2 leagues distance, there is another reef; and to the S. Westward, lie the small Islands Caluja and Cavilli, at a considerable distance from each other.

Geo. site.

When the Cagayanes Islands bore W. by N. about 6 leagues distant, they were just visible from the deck; and I made the body of them in lat. 9° 34′ N., lon. 121° 23½′ E. by mean of Captain Heywood's observations and my own, differing 4 miles from each other. There seems to be an opening in the reef, off the South point of the easternmost island, with soundings of 4 and 5 fathoms inside, forming a kind of harbour for small vessels.

Geo. site of Point Naso; coast adjacent.

POINT NASO, or NASOG, (I made) in lat. 10° 25′ N., lon. 122° 6′ E. by a series of lunar observations, and chronometers corresponding,* is a high bold headland forming the southern extremity of the Island Panay, and bears from Point Balagonan N. 7° W., distant about 52 leagues. Close to the point, there are 2 low isles, with soundings of 5 and 6 fathoms in the gut betwixt it and the northernmost isle, and from 10 to 20 fathoms near the reef that fronts the N. W. side of this isle.

Along the S. E. and East coasts of Panay, there is a navigable strait, with moderate

* Captain Heywood, made it in lat. 10° 24′ N., lon. 122° 8′ E. by chronometer.

depths for anchorage among the numerous small isles; Mr. Dalrymple, went through this strait with the Schooner Cuddalore in 1761. In the West entrance of the strait, where it is formed betwixt the large Island GUIMARAS and the coast of Panay, the depths are only 4 and 5 fathoms; but increase to 10 or 12 fathoms inside, at the Spanish settlement Yloylo. This place is about 10 leagues to the E. N. E. of Point Naso, and the strait here, forms a safe harbour, where supplies may be obtained if a ship is in want.

Yloylo.

The West coast of Panay, is generally of moderate height near the sea, well peopled, and cultivated in many places with rice. Several villages, with churches, are discerned in sailing along, but no soundings are got unless close to the shore. A chain of mountains, very rugged in some parts, stretches inland from Point Naso to the northern extremity of the island.

Asloman Village, and coast adjacent.

ASLOMAN VILLAGE, in lat. 10° 32′ N., situated in the bottom of a small deep bay, about 2½ leagues to the northward of Point Naso, may *probably* afford refreshments, for it is a considerable place; but it is uncertain, whether there be any safe anchorage.

Coasting along from Point Naso to Antique Bay, we could get no soundings 3 or 4 miles off shore.

Antique Bay, Village,

ANTIQUE BAY, about 5½ leagues to the northward of Point Naso, is a convenient place to stop at for water and refreshments, there being a Spanish Governor, with a few Europeans and some native troops, stationed at the Village Antique, where there is a small river and fort. When a ship is running into the bay with a brisk wind, sail must be reduced in time; for the bank being steep, no soundings are got until abreast of the fort about 2½ or 2 miles distance, and the depths quickly decrease from 30 or 25 fathoms, to 8 or 7 fathoms sandy bottom, which is the proper anchorage.

The Laurel from Bengal bound to Macao, after passing through the Straits of Sunda, Macassar, and Baseelan, steered to the westward of these islands, and touched at Antique Bay on the 12th of April, 1788, where a Portuguese ship and 2 Spanish Snows were at anchor. When at anchor in the bay in 7 fathoms sand, the observed lat. 10° 42′ N., the fort bearing E. by N. ½ N. 1½ or 2 miles, and the extreme points S. ¾ W. and N. W. ½ N., the North point of the bay distant about 3 miles.

and anchorage.

By permission of the Governor, she procured wood and water, some paddy, poultry, and a bullock; but no fruit or vegetables could be got at that time.

Point Potol, and adjacent coast.

POINT POTOL, in about lat. 11° 48′ N., bearing North a little westerly from Point Naso, is the north-westernmost headland of the Island Panay, and over it stands a high mountain, discernible at a great distance. From Antique Bay to Point Potol, the coast may be approached in day-light, within 3 or 4 miles, there being no hidden danger. Near the shore, in about lat. 11° 32′ N., lie 2 small islands; another island, bears S. W. 4 or 5 leagues distant from Point Potol, having a safe and wide channel betwixt it and Panay.

How to sail along it.

This track contiguous to the coast, seems preferable to the channel in the offing between the dry sand bank and Cuyos Islands; for in the N. E. monsoon, land and sea breezes will sometimes be found in shore, when calms or baffling airs prevail outside.

Geo. site of dry sand bank.

DRY SAND BANK, in lat. 11° 24½′ N. lon. 121° 54′ E. by our chronometer, in the Anna, situated in the channel to the westward of Panay, bearing from Point Naso N. by W. distant 20 leagues, is a little elevated from the water, and may be seen about 6 miles from the deck. It is distant about 5 or 6 leagues off the Panay shore, and is in one with a high peaked mountain bearing E. ½ N., and the channel between it and the islands to the westward, is about 9 or 10 leagues wide.

Sombrero Rock.

SOMBRERO ROCK, in lat. 10° 45′ N., distant about 9 leagues from the coast of

Panay, is very little larger than a long boat, and can only be discerned about 3 leagues distance from the poop of a large ship, generally appearing black. It bears from Point Naso N. 51° W. distant 12½ leagues, from the centre of Grand Cuyo E. 14° S., and from Paguayan the easternmost of the Cuyo Islands S. 46° E., distant 20 miles. Soundings appear to extend from the Cuyo Islands nearly to the Sombrero rock; when it bore S. 9° W. seen from the Crosjack yard, the Coutts had 120 fathoms green sand at noon, the observed lat. 10° 55′ N. There is another WHITE ROCK, in lat. 10° 28′ N., distant about 7 leagues South from the S. W. point of Grand Cuyo, which is far to the westward of the common track. White Rock.

CUYOS ISLANDS, named from Grand Cuyo, the largest of them, consist of an extensive group of mostly high rocky islands of various sizes, fronting the West side of the channel opposite to Panay, the nearest of them being 12 or 14 leagues distant from that coast. Grand Cuyo, in about lat. 10° 52′ N. is 1 of the southernmost, well cultivated with rice in some parts, but many of the other islands are barren and rocky. They extend from lat. 10° 40′ N. in a N. N. W. direction to Quiniluban the northernmost island, in lat. 11° 28′ N., lon. 121° 11′ E. by chronometer; which bears from the Dry Sand Bank about W. ½ N., distant 14 leagues, and is a high island, with others near it to the southward. Cuyos Islands. Geo. site of Quiniluban.

There are soundings near these islands on the East side, from 40 to 75 fathoms; also among, and to the westward of them, there are safe channels, with various depths from 30 to 60 fathoms: nevertheless, a large ship ought not to pass between any of them, if it can be avoided, for reefs extend a great way from some of these islands, and there are several shoal patches of coral not well known. Soundings.

CARAVAOS, or BUFFALOS, in about lat. 11° 53′ N., bearing from Quiniluban about N. E. by E. distant 14 or 15 leagues, are 2 islands which bound the channel on the East side, and lie in a W. N W. direction from Point Potol: they ought to be approached with caution in the night, for the outermost is very low. To the N. Westward of these, lie the SIMIRARA ISLANDS, having a long sand projecting a great way out from them, with 2 islets on its centre, covered with trees. When passing this sand at 3 miles distance, it bore from E. S. E. to N. N. W., a rock off the northernmost Simirara Island bearing then N. E. ½ E., and the easternmost of the Buffalos E. by S. Caravaos. Simirara Islands.

FALMOUTH'S BANK, situated betwixt Quiniluban and the Strait of Mindora, is of considerable extent North and South, with various depths on it from 60 to 20 fathoms, and and the least water found on it, was 11 or 12 fathoms coral rock. Upon the North part of it, the fleet had soundings on the 30th of May, 1801, with the island Ambolon bearing N. 3° E., and Simirara from N. 60° E. to N. 63° E.; the Coutts had then 68 fathoms, next cast 14 fathoms, with Simirara N. 63° E., southern part of Calamianes W. 5° S., Quiniluban S. 20° W., and carried soundings of 12½ to 15 fathoms for a considerable distance, steering S. S. E. Falmouth's Bank.

There are other coral banks in this neighbourhood, detached from the Falmouth's Bank, on 1 of which we had several casts in the night of 22 to 25 fathoms, then no ground at 80 fathoms. By the bearings at day light, this bank appeared to bear from Quiniluban N. ½ E. distant about 5 leagues, and E. ¼ S. from the South extremity of the Calamianes. On another bank, about 6 or 6½ leagues to the N. W. of Quiniluban, and 4 or 5 leagues to the eastward of the Southern Calamianes, the Betsey had only 5 fathoms. Other banks.

STRAITS OF MINDORA, is separated into 2 channels by the Apo Shoal; the western 1, formed betwixt this shoal and Calamianes, is 6 leagues wide, called sometimes Northum- Strait of Mindora.

berland Strait; the other formed betwixt the West coast of Mindora and the shoal, is 4 or 5 leagues wide.*

Geo. site of the islands fronting the S.W. end of Mindora.

AMBOLON, AND EAST AND WEST YLIN, with a contiguous islet, front the S. W. end of Mindora at a small distance, and are of moderate height; Ambolon being the westernmost of these 3 islands, but East Ylin projects farthest to the southward. The South end of this island is in lat. 12° 9′ N., lon. 121° 15′ E., or 7° 43′ East of Macao by chronometers, and bears from the dry sand bank off Panay, N. 38° W. distant 20 or 21 leagues.

To sail from Panay toward these.

In running across from Panay toward these islands in the night, care must be taken when borrowing on the East, or windward side of the channel, in order to give a birth to the Buffalos, and the sand that projects from the Simirara Islands. When within 6 leagues of Ambolon and Ylin, haul to the westward, and keep at 4 or 5 leagues distance from them, until their southern extremity bears E. S. E. ½ S.; being then clear to the northward of the coral banks that lie to the westward of these islands, haul in for the Mindora Shore, if you intend to pass between it and Apo Shoal.

Coral banks off those islands.

Exclusive of the shoal said to project from these islands to the S. Eastward several miles, there is a coral bank, or a *chain* of banks, to the westward of them; for in working to the southward in June, 1792, returning from China in the Anna, we got suddenly into 13 and 9 fathoms bright coral rocks, seen under the bottom, and immediately after tacking to the westward, got no soundings. The observed lat. 12° 13′ N. when we tacked at noon in 9 fathoms, with the low point at the S. W. end of Mindora bearing E. N. E. ¾ N., extremes of the islands near it from E. N. E. to E. by S. ¾ S., the body of Ambolon E. ½ S. distant nearly 3 leagues, and the Calamianes from West to W. S. W. ¾ S. After standing 4 miles to the westward, stood back and tacked on the edge of the coral bank in 13 fathoms, with the southern extremity of the islands off the S. W. end of Mindora bearing E. by S. ¼ S., and the body of the southernmost island E. ¼ S., distant 3 or 3½ leagues. From thence, stood 3 miles N. Westward, and saw the rocks under the bottom on a coral patch, with apparently 12 or 15 fathoms water on it; but before the lead could be hove, we were off it, out of soundings; the Calamianes bore then from W. ¾ S. to S. W. ½ W. distant about 8 leagues, the islands off the S. W. end of Mindora from E. by N. to E. S. E. ¼ S., Ambolon the nearest island, distant about 4 leagues.

As the Lord North and other ships, seem to have passed within a few miles of the West side of Ambolon without getting soundings, these coral banks are probably detached from the islands. It may nevertheless, be prudent, to keep about 4½ or 5 leagues from the West

Directions to avoid them.

side of the islands, in order to pass outside of these steep coral banks, or bank; for the verge of soundings was conspicuous by the discoloured water, which appeared shoaler in upon the bank to the eastward, than where we tacked in 9 and 13 fathoms; but no broken water could be perceived. From 10 or 12 fathoms, the bank shelves down to no ground 80 fathoms, at the distance of ½ a cable's length to the westward.

Port Mangarin.

PORT MANGARIN, formed between Point Buruncan (which is the southern extremity of Mindora) and the contiguous islands Ylin and Ambolon, is sheltered from all winds, with good depths of water; but at the entrance, betwixt the N. W. point of Ylin and Mindora, there are some rocks, with 5 or 6 fathoms water between them.

Apo Shoal.

APO SHOAL, situated between the West coast of Mindora and the Island of Busvagon, was examined by the Company's ships Discovery and Investigator, in 1816, and its true position determined by correct observations and good chronometers.

* Lieut. Ross, in his survey of the Apo Shoal, thinks this channel to be only about 4 leagues wide; but in passing twice through it in the Anna, it appeared to us, to be not less than 5 or 6 leagues wide.

The northern extremity of the shoal, is in lat. 12° 45′ N. lon. 120° 31′ E., or 11¼ miles eastward of Point Calavite on Mindora: from the northern extremity it extends S. E. by S. 7½ miles, where it forms a very narrow spit or East point, in lat. 12° 40¼′ N. lon. 120° 36′ E.; from the eastern point, the southern extreme bears S. 95° W. distant 5½ miles, and between the 2 points, there are several indentures or gaps in the shoal. On the western side of it, there are 2 islands, the western 1 being largest, about ½ a mile in diameter, is covered with trees, and white beaches line its northern and eastern sides, with a surrounding reef projecting about ½ a mile. This island does not appear to be connected with the Apo Shoal, but about 1½ mile to the E. N. E. of it, lies the small island formed of barren black rocks, which is situated on the S. Westernmost part of the shoal.

Geo. site of North Point, and East Point. Islands on it.

The large island is in lat. 12° 39′ N. lon. 120° 28′ E., or 8¼ miles eastward of point Calavite: from the centre of this island, the north point of the shoal bears N. 24° E., distant 7 miles; the eastern point bears from it E. 9° N. distant 8 miles; and the South point bears S. 56° E. distant 6¾ miles. The whole extent of the shoal is 10 miles from its North to its South points, and 9 miles from its East point to the western part of the large island. There are 2 high black rocks to the N. E. of the small island, which may be seen about 2 leagues off, and the islands in clear weather may be seen (from an elevation of 20 feet) about 3½ leagues. At low water, many small rocks are dry on the shoal, particularly along its north side.

Geo. site of the large island. Black rocks.

Small round bank of coral rocks, on which the Discovery anchored, and found the least water 9 fathoms, lies 7 miles eastward, of the eastern point of Apo Shoal. When at anchor on it, the large island on the Apo Shoal visible half way up the lower rigging, bore W. 6° S., and the northernmost 1 of 2 small islands that lie off Pandan Point on Mindora, bore N. 25½° E., distant 7 or 8 miles, by which it appears, that in the late Spanish survey of the west coast of Mindora, these islands are placed about 2 miles too much to the eastward of Point Calavite, which seems to make the channel between them and the eastern point of Apo Shoal only about 4 leagues wide.

Coral bank. Eastern Channel.

Ships intending to pass between the coast of Mindora and the shoal, if at night, should keep about 2 leagues off the small islands near Pandan Point, as the eastern point of the Apo Shoal is very narrow, and should the wind be westerly, you would not readily perceive it, nor would there be breakers to make known your approach to danger.

To pass it at night.

Whilst examining the Apo Shoal, the Discovery and Investigator, were frequently very near it without obtaining soundings, and the boats found it very steep to, in all parts. Land and sea breezes were experienced here in March, the latter from West and S. W., with the tide or current setting to the northward: land and sea breezes prevailed also to the westward of the Calamianes.

NORTHUMBERLAND STRAIT, or the channel westward of the Apo Shoal, appears to be preferable at all times, it being 6 leagues wide, with the advantage of the large Apo Island to guide you when passing the shoal, knowing that you may approach the island to the westward within 1 mile.

Western Channel six leagues wide.

The islands situated to the northward of the Calamianes and Busvagon, were also examined by the Discovery and Investigator, and their situations well determined.

NORTH ROCK, in lat. 12° 27′ N., lon. 120° 4¼′ E., or 15½ miles West of Calavite Point, is a high black rock, having 3 others at a short distance to the westward of it; this is the northernmost of these islets which lie on the West side of the western channel, and it may be seen 4 or 5 leagues from the deck. Lieut. Ross made the North rock as stated above. Passing in the Anna in 1792, our observations made it in lat. 12° 26′ N., lon. 120°

Geo. site of North Rock.

6′ E., corresponding with the Castlereagh's chronometer, which made it 14° 39′ East of Pulo Domar.

The largest island on Apo Shoal, bears from the North rock N. 62° E., distant 25 miles: near this rock to the northward, there are 40 and 50 fathoms water, and the same depths between it and Busvagon, on a muddy bottom.

Turret Island. TURRET ISLAND, bearing from North Rock S. 50° E., distant 7¼ miles, is small and rocky, having several detached rocks about it, and a remarkable hummock on its S. W. point, somewhat similar to a turret.

Black Rock. Other Islands. From North Rock S. 63° E., distant 16 miles, lie 2 small islands covered with trees, which have sandy beaches, and about 1½ mile to the northward of them, there is a *black rock* above water. These 2 islands bear from the western island on the Apo Shoal S. 24° W., distant 19 miles, and is the nearest to this shoal of any of the islands lying off Busvagon; there is 25 fathoms on a coral bottom, about 4 miles to the northward, and the same depth about 4 miles to the eastward of these islands.

Group of Islands. A GROUP OF ISLANDS, extending from lat. 12° 8′ to 12° 17′ N., bear about S. by W. from Apo Island, the northern 1 of which appears to be the largest, and are the easternmost islands hereabout: overfalls of 25 to 9 fathoms, were got about 2 miles to the N. Eastward of the northern island, and the channels between the islands did not appear very clear. Soundings of 23 fathoms were found about 7 miles to the N. E. of this group of islands, and Coral Banks. 2 casts of 24 fathoms, on a bank about 9 miles to the westward of Apo Shoal, by which we may infer, that there are several such coral knowls about these straits, although probably not so shoal as to be dangerous to ships.

Geo. site of Calavite Island. CALAVITE ISLAND, or HIGH ISLAND, in lat. 12° 21′ N., lon. 119° 56½′ E. by Lieut. Ross, bearing from North Rock S. 51° W. 9¾ miles, is about 2 miles to the northward of the northern point of Busvagon; the channel between them does not appear free of danger, as some rocks were seen above water to the eastward of the island.

About a mile to the N. W. of Calavite Island, there are rocks above water, 1 of which, Sail Rock. named SAIL ROCK, is very remarkable, and 1¾ mile to the N. W. of this, lies a large Geo. site of N. W. Rock. black rock, or N. W. ROCK, in lat. 12° 23¼′ N., lon. 119° 54¾′ E. When passing between these had 38 fathoms, and about 2 miles to the N. N. E. of N. W. Rock, passed over a coral spot in 8 fathoms.

Pinnacle Rock. PINNACLE ROCK, in lat. 12° 18½′ N., about 2 miles West of the North point of Busvagon, is a very sharp rock above water, having 25 fathoms water about 2 miles to the westward of it, and 12 fathoms about 1 mile off. In lat. 12° 9′ N., lon. 119° 51¼′ E. lies Geo. site of Haycock. the HAYCOCK, a high rocky island, situated about 2 miles off the West part of Busvagon, which may be seen 6 or 7 leagues; about 2½ miles West of it, soundings of 26 fathoms were found, with overfalls; 19 fathoms about 6 miles off, and 30 fathoms about 11 miles off.

Geo. site of Green Island. GREEN ISLAND, in lat. 12° 3′ N., lon. 119° 49¼′ E., is of moderate height, may be seen about 5 leagues off, and is well covered with trees; it is the westernmost island hereabout; surrounded by a coral reef, extending about ⅓ of a mile off. To the eastward of Green Island, there is a large bay or passage, with numerous small islands in it, and about 3 or 4 miles to the N. W. of the island, the Discovery got overfalls on a coral shoal, but did not find less than 5 fathoms: to the eastward of the island 23 fathoms was found, and 9 and 10 fathoms close to the reef.

In lat. 11° 56¼′ N., lon. 119° 51½′ E., there is a high point of land, apparently the western extremity of the Calamianes, near which lies a rock above water, and a short distance to the

S. W. there are other rocks above water. From this point the land curves into the eastward, and extends to another high point in about lon. 119° 56′ East, forming several points, and to the southward of the southern extreme, there is apparently a wide strait or channel, leading to the eastward.

CALAMIANES, or CALIAMANES, are a group of high islands of various sizes, situated between the North end of Palawan and Mindora, the northernmost of which have been described above. BUSVAGON, is the largest of them, distant about 14 or 15 leagues from Mindora, and with the small isles that line its eastern shore, bounds Northumberland Strait on the West side. If passing through this strait with a westerly wind, borrow toward Busvagon and the isles on that side, which are safe to approach; or with an easterly wind, the Large Apo Island which bounds the East side of the strait, may be approached occasionally to 1½ mile. On the East side of Busvagon, there are soundings among some of the small isles, and anchorage in 1 part, near the shore of the former. CORON, situated to the southward of Busvagon, is also a considerable island, with small isles near it on the East side, and forms the southern limit of the Calamianes, in lat. 11° 46′ N. Near the S. E. part of Coron, lies the Island Delian, with a round rock close to its South point, to the eastward of which H. M. S. Belliqueux, got 5½ fathoms on a coral bank about 3½ leagues East of Delian, in July, 1807, and 12 fathoms coral on another bank about 5 leagues to the S. S. E. of the same island; with generally soundings from 40 to 55 fathoms near them, and the same depths northward to the Island Diviran, with 44 and 45 fathoms toward Gap Island, which lies near the East side of Coron, bearing about North from Delian, and S. Westward from Diviran. Calamianes.

WEST COAST OF MINDORA, has no soundings excepting in the bays, or within 1 or 2 miles of the shore, in some places. Inland, double and treble chains of mountains extend through the island, and some low points of land, project from them into the sea. West coast of Mindora.

From the low point Mangarin, opposite to the North end of the island Ambolon, the coast is low and woody close to the sea, to the distance of 4 or 5 leagues N. Westward; having a beach and some inlets, like rivers in this space, with the village of Ililin. There is said to be a shoal stretching along the shore, to the southward of Usuanga Bay, with 2 islets close to the coast, in about lat. 12° 35′ N.

USUANGA BAY, about 6 leagues to the northward of the Island Ambolon, is about 1½ mile wide, and nearly the same depth, with soundings of 30 fathoms in the entrance, decreasing to 8 or 9 fathoms sandy bottom inside. A rocky reef with soundings from 1 to 3 fathoms on it, projects from the North point of the bay above ½ a mile to the southward, which must be avoided, should a ship stop here for water. It is prudent not to anchor under 10 or 12 fathoms, without first examining the ground, for near the rocky islets at the bottom of the bay, there is shoal water and rocky bottom. Fresh water is found in a large pond at the S. E. side of the bay. Usuanga Bay.

POINT DONGAN, or PANDAN, is a low projecting headland about 3 leagues farther to the northward, in about lat. 12° 48′ N., having 2 small islands off it, and a bay on the North side. From hence, there are soundings within 2 miles of the shore, as far as Santa Cruz Point, situated 5 leagues more to the northward, where a ship may occasionally anchor off the river and village of that name. The coast hereabout, abounds with good pasturage, and in sailing along, we saw herds of bullocks grazing. Point Dongan and the adjacent coast.

To the N. W. of Santa Cruz Point, lies Tulaba River and Bay, with soundings of 8 and 9 fathoms about a mile off shore, opposite to a peaked hill. In lat. 13° 10′ N. a reef projects near 2 miles from the North point of Masi Bay, with 2 to 6 fathoms on the North side of it in Mamburao Bay, the West point of which in lat. 13° 14′ N. is also fronted by a reef, with

the whole of the latter bay. Point Tibili is about 5 miles farther to the N. W., from whence in a northerly direction, there are soundings near the shore into Palaon Bay.

Palaon Bay.

PALAON, or PALASAN BAY, about 2 leagues to the E. S. Eastward of Point Calavite, extends northward into the land about 3 or 4 miles, and is of circular form, having a reef projecting from the western point of the entrance. The soundings in it, are from 30 to 15 fathoms sand or mud, where a ship may anchor in 10 or 12 fathoms, and procure fresh water at a small village, where there is a river, with a red cliff near it, at the N. Eastern part in the bottom of the bay.

Geo. site of Point Calavite.

POINT CALAVITE, in lat. 13° 27′ N., lon. 120° 20′ E. or 6° 48′ East from Macao by chronometer, forms the N. W. extremity of Mindora, and bears N. 31° W. from the Island Ambolon, distant 29 leagues. Betwixt the point and Palaon Bay, there are soundings near the shore, which is bold to approach; for the few rocks interspersed along this part of the coast, adjacent to the point, lie close in, and 1 of them, just above water, has a sandy beach adjoining, upon the projecting part of the coast that forms Calavite Point. Over this point, stands Mount Calavite, a very high mountain, of regular sloping form, which is visible at a great distance in clear weather.

To sail along the West coast of Mindora;

Having rounded the islands off the S. W. end of Mindora, as before directed, if to pass through the eastern channel, after hauling in for the Mindora Coast to avoid the southern extremity of the Apo Shoal, you ought with an easterly wind, to keep within 2 or 3 leagues of that coast, in proceeding along it to the northward. With a westerly wind, do not exceed the distance of 3, or 3½ leagues from the coast, until clear to the northward of the Apo Shoal; and in the night, it is prudent to borrow nearer to the coast than to the shoal. Variable winds, or land and sea breezes, may be expected here, in March and April, and also along the coast of Luconia. Having rounded Point Calavite, and passed Luban and Goat Island, you may proceed along the coast of Luconia to Cape Bolina, conforming to the directions given in the description of that coast, and to those for proceeding to Canton River by the Palawan Passage, which will be found in the 2d Section, under the title "*China Sea.*"

and from thence toward China.

## *DIRECTIONS for the RETURNING PASSAGE from CHINA, on the WEST SIDES of the PHILIPPINE ISLANDS.*

Directions for sailing from China late in April, or in May.

ALTHOUGH SHIPS departing from CANTON RIVER, toward the end of April or in May, will be able sometimes to make a direct passage through the China Sea to Malacca Strait, in some years they may find difficulty in doing so. But it will answer no useful purpose, for ships bound to the western side of Hindoostan, or to Europe, to pursue that route if adverse winds are found to prevail; because these winds will continue adverse, in working out of the western part of the strait of Malacca, and will remain so, after rounding Achen Head, in proceeding through a space of 12° or 14° of lat., or until the limit of the S. E. trade is approached in lat. 7° or 8° S.

Neither ought ships to pursue the route to the southward for Gasper Straits, or the Carimata Passage, in May or June; because, S. E. winds then prevailing with N. Westerly currents, render the passage through between the islands very tedious in these months, particularly in a ship that sails indifferently. From what has been stated, it seems proper, for

ships departing from Canton River late in April or in May, to adopt the passage to the westward of the Philippine Islands, if bound to the western side of Hindoostan or to Europe; particularly when easterly winds are experienced at leaving the Grand Ladrone, which would retard them getting out into the Pacific Ocean, were they inclined to proceed by that route.

To proceed toward Mindora Strait in these months.

Departing, therefore, from the Grand Ladrone, late in April or in May, and intending to pursue the route by Mindora Strait, steer southward to the Macclesfield Bank, if the wind permit, particularly in May, to be enabled to reach the N. W. end of Mindora without tacking, should the wind veer round to S..Westward.

If near the Macclesfield Bank with the wind at S. W. or S. S. W., steer to the S. E., by the wind; although unable to weather Point Calavite, variable winds may be expected near the coast of Luconia, to carry you round the N. W. end of Mindora; whereas, about 2° or 3° off the coast, light breezes prevail at South or S. S. E. in May, or early in June.

To sail to the southward through that strait,

If you adopt the eastern strait, or that formed between Mindora and Apo Shoal, keep within $3\frac{1}{2}$ or 4 leagues of the coast in passing the latter, when the wind inclines from S. Westward in the day time; but the winds are frequently variable, inclining to *irregular* land and sea breezes, and you may borrow within a few miles of Mindora with a land wind. In steering southward along the coast, when the islands off the S. W. end of Mindora are first seen, they will appear separated from it by a wide opening, as the low land that forms the S. W. end of that island, is not then discernible. Keep about 5 leagues from the islands Ambolon and Ylin in passing, when their southern extremity bears between E. S. E. $\frac{1}{2}$ S. and E. N. E. to give a birth to coral rocks which lie to the westward of them.

Northumberland Strait, or that formed between Apo Shoal and the Islands Calamianes, being wider than the eastern strait, should be chosen if the wind permit, and either side of it may be borrowed on as circumstances require, the channel being 6 leagues wide between the large island at the western edge of Apo Shoal and those of the Calamianes.

along the coast of Panay,

When the South end of the Calamianes is bearing West about $5\frac{1}{2}$ or 6 leagues distant, Quiniluban will be seen bearing S. by E. or S. S. E. 6 or 7 leagues, if the weather be clear: borrow toward this island with a westerly wind, to pass to the westward of the Dry Sand Bank; then proceed, or work along the West coast of Panay at any discretional distance. Although irregular land and sea breezes, are sometimes experienced close to the West coasts of Mindora and Panay in the S. W. monsoon, yet the prevailing winds are between South and West, with cloudy weather and frequent heavy showers of rain. The currents are seldom strong in this season, but they are liable to set to the eastward in the opening between Negroes Island and the North part of Mindanao.

through Baseelan Strait.

Departing from Point Naso, in June or July, haul to the S. S. Westward in crossing over, to make the coast of Mindanao well to the southward, and check any easterly current that may probably be running in between Mindanao and Negroes Island; but, with an easterly wind, steer a direct course for Point Balagonan. Having reached the S. W. end of Mindanao, the route through Baseelan Strait ought to be chosen in preference to that through amongst the islands to the southward, for it is more direct than the latter.

and from thence,

Having rounded the East end of Baseelan, if you intend to pass through either of the straits East of Java, into the Indian Ocean, you have the choice of proceeding by the strait of Macassar, or by the Molucca Passage; by some navigators, the latter route is considered more certain and expeditious, when the S. E. monsoon prevails to the southward of the equator. Indifferent sailing ships, which proceed through the strait of Macassar, are seldom able to reach Allass Strait, without working round to the eastward of Kalkoon Islands and Shoals, which prolongs the passage; and if the S. E. monsoon blow strong, it may sometimes be found impracticable to work against it:* whereas, ships proceeding to the south-

* The homeward bound fleet, left the Grand Ladrone about the middle of May, 1801, and proceeded to the westward of the Philippine Islands, through Macassar and Allass Straits. Although they kept along the Celebes

ward by the Molucca Passage, enter into the S. E. monsoon so far to the eastward, that they have the choice of proceeding through any of the straits at discretion. But for ships intending to touch at Batavia, or to proceed through Sunda Strait, the route by the strait of Macassar may be found most convenient.

by the Strait of Macassar;

If the strait of Macassar is to be chosen, steer a course from Baseelan as the prevailing winds and currents require; for the former are often light and variable, although generally betwixt South and West, when they are a little steady. Nevertheless, Easterly, or S. Easterly breezes, continue sometimes for 4 or 5 days together.

The currents are also very mutable, sometimes setting strong to the eastward, along the South side of Mindanao, in June and July, and afterward to S. Eastward, in the track from thence to Celebes: but they are liable to change and run to the westward. In June, the fleet had strong S. E. currents in the track from Baseelan to Cape Donda; and early in July, we had them setting mostly to the westward, with S. E. and Easterly winds.

Should the wind be steady at eastward, Cape Donda bearing about S. S. E. or South, will be a good landfall. But the winds generally draw to the westward as the North entrance of Macassar Strait is approached, with a current frequently setting out of the strait to the eastward, rendering it prudent to keep to the westward if possible, and make Point Kanneeoongan; if you fall in with the coast of Celebes far to the eastward of Cape Donda, much time may be lost, beating into the strait against the westerly winds and N. E. currents. The fleet, which fell in with the coast of Celebes far to the eastward of Cape Rivers, on the 19th of June, 1801, did not get round Cape Donda until the 2d of July. And the Fox, Lord North, and Hastings, were from the 26th of May to the 6th of June, 1781, near the North coast of Celebes, endeavouring to work into Macassar Strait without gaining any ground; and were obliged to bear away for the Molucca Passage.*

Having entered the strait of Macassar, the route along the Celebes side may be pursued if your ship sail indifferently, or if you intend to pass through the strait of Allass, in order to pass well to the eastward of Pulo Laut, by being more to windward than by proceeding along the coast of Borneo, to the westward of the Little Pater Nosters. But great caution is requisite in pursuing the eastern route, when crossing the latitude of the Laurel's Shoal, and of those to the northward of the Islands Noesa Seras, already described in the directions given for the strait of Macassar.

If bound to Batavia, or through the strait of Sunda, proceed to the southward as the winds permit, observing not to increase the lat. above 1° 50′ S. until the Borneo coast is approached within 4 or 5 leagues; which must be continued so, in passing the Little Pater Nosters, that the dangers in the offing, fronting these islands, may be avoided; and the coast from Ragged to Shoal Points, must be approached still nearer, on account of the shoals which bound the East side of the channel in that part.

S. E. winds generally blow strong into the South entrance of the strait, during the S. E. monsoon, producing a considerable swell, and are sometimes accompanied by a northerly current. This may excite apprehensions of difficulty being experienced in getting round Great Pulo Laut, more particularly, as the Admiral Pocock found it impracticable to beat round in July, and was obliged to return to Sooloo for provisions. But this ship *probably* had a very foul bottom, and sailed badly, for ships which sail tolerably, seldom experience

side of the former strait, to the eastward of the Little Pater Nosters, they lost some days beating round the Kalkoon Islands, were 8 days from in sight of Little Pulo Laut to Bally Town in Allass Strait, where they anchored on the 15th of July, and found an American ship had been here 2 days, which left China with them, and came by the outer track through Dampier's Strait and the Pitt's Passage.

* They got into the Molucca Passage on the 9th of June, and continued to beat against southerly winds and constant northerly currents, until the 4th of July, but could not get to the southward betwixt Lissamatula and Oby Major. The Fox, being the best sailer, got through; but the Lord North, and Hastings, were obliged to go round Gillolo and Morty, and after a great loss of time, entered the Pitt's Passage by Dampier's Strait. They sailed from China on the 1st of April, came through the Mindora Sea, and touched at Sooloo.

much delay in working round Pulo Laut in the S. E. monsoon. In July, we had in the Anna, a fresh monsoon at S. E. and S. S. E., with a heavy sea against us; notwithstanding, we soon worked round, for the current *apparently* set to the southward out of the strait, in opposition to the wind and sea. Nevertheless, the eastern side of the strait may be pursued in an indifferent sailing ship, that she may be enabled to clear Pulo Laut with the S. E. wind, without the risk of prolonging her passage by having to work round.

From the South end of Great Pulo Laut, a steady and fresh easterly monsoon, with clear weather, will be experienced in steering to the westward between Java and Borneo.

MOLUCCA PASSAGE, may be pursued, if the winds and currents are found after leaving Baseelan, to be unfavorable for proceeding toward the strait of Macassar. In such case, steer for the islands contiguous to the N. Eastern extremity of Celebes, and after passing through the channel betwixt the islands Banca and Bejaren, and having rounded the N. E. end of Celebes, proceed to the southward between Lissamatula and Oby Major, which is the common passage; or otherwise through Greyhound's Straits.

Or by the Molucca Passage.

Sometimes it is tedious getting through the Molucca Passage to the southward, because the current often runs through it to the northward; but the winds are light and variable at times, and the current liable to change.

It appears, however, that a N. Easterly current prevails greatly betwixt Celebes and Gillolo, particularly in the southerly monsoon, so that indifferent sailing ships may not be always competent to beat through the Molucca Passage, to the southward: but this may be effected if they keep close to the coast of Gillolo, and pass betwixt it and Batchian, through the strait of Patientia; or through the strait of Batchian, formed between the island of this name, and the Islands Tawally and Maregolang. Nevertheless, should a ship happen to be near the North end of Gillolo, or Morty, in the strength of the southerly monsoon, the route through the Gillolo Passage seems preferable to that by the Molucca Passage; for ships generally get speedily through the former, into the Pitt's Passage.*

It may be proper in this place to observe, that in all the charts, English and Dutch, there is a ***good passage*** with soundings of 20 and 17 fathoms, laid down betwixt the large Islands Xulla Mangola and Xulla Talyabo; but H. M. S. Greyhound could find no such passage. This ship was proceeding from Manado at the N. E. part of Celebes, toward the South end of Bouton, in order to intercept a ship about to sail from Amboina with spices for Batavia: and with a view to shorten the passage, she intended to proceed through the channel represented on the charts, betwixt the Xulla Islands, mentioned above. To their great surprise, no such channel could be found, but the wind favoring them, they passed to the westward round the West end of Xulla Talyabo, and got speedily to the South end of Bouton.

A channel placed in the charts, has no existence.

EASTERN COAST OF CELEBES, adjoining to the Molucca Passage, is very imperfectly known, and little frequented. The extensive peninsulas of which this coast is formed, are fronted by islands of various sizes; and many islands are interspersed over the great bays of Tolo, and Tominie, or Goonong Tella. In the latter bay, which stretches inland nearly to the West side of Celebes, there are soundings in some parts near the shore, and *probably* good harbours, formed by some of the islands.

East coast of Celebes.

GOONONG TELLA RIVER, situated on the North side of the bay, in lat. 0° 28½′ N., lon. 123° 15′ E., has 2 small coves just within the entrance on the eastern side; into

Geo. site of Goonong Tella River.

* Returning from China by the Eastern Passage, it seems advisable in a ship that sails indifferently, to pursue the route to the eastward of Luconia, and enter the Pitt's Passage by Dampier's Strait; for in some years, difficulty may be experienced in getting to the southward through Macassar Strait, or through the Molucca Passage; but this will *now* seldom happen, as coppered ships sail much better than formerly those with foul bottoms could possibly do.

either of which a small ship may haul, and moor to the large stones that lie on the beach. Here, she will be sheltered from the rapid stream, that descends from the mountains after much rain, and runs with great velocity into the sea.

The sea breeze sets in about 11 A. M., and abates about 4 or 5 hours after noon, when the land wind begins to blow from the mountains, frequently in strong gusts. A ship may bring up in from 30 to 56 fathoms, under the eastern point of the entrance, until the sea breeze sets in; she can then proceed into either of the coves, or anchor in mid-channel, close to the fishing stakes in the entrance of the river.

The village is about 2 miles up the river, and the natives, who are chiefly Mahometans, carry on a considerable trade in wax and gold dust. The Dutch have 2 or 3 small forts on the banks of the river, for the protection of the place, which abounds with all kinds of refreshment; horses, buffalos, bullocks, sheep, goats and poultry, may be procured.

and adjacent coast. From Goonong Tella River, to Current Island, situated close to the N. E. extremity of the bay, the coast is high and bold, without danger. From the West side of this island, some rocks stretch out 2 miles; and about 3 miles to the N. W. of it, there are soundings of 50 to 25 fathoms muddy bottom, about a mile off shore, where a ship might anchor, if necessary, which place has been named Elphinston's Bay. Outside of Current Island, the current generally runs to the northward, but to the westward of it, in Goonong Tella Bay, there is seldom much current.

From Current Island, to Kema Road, the coast of Celebes may be approached to 3 miles, and in many places much nearer. The N. E. part of Celebes, and the anchoring places adjacent, have been mentioned in a preceding section, where directions are given for sailing from the strait of Macassar into the Pacific Ocean.

Cape Talabo or Talyabo in about lat. 0° 48′ S., is a steep headland, forming the extremity of the peninsula that separates the bays of Tolo and Goonong Tella, and lies about 20 leagues to the N. W. of the West end of the large Island Xulla Talyabo.

To sail from the Molucca Passage to the westward, Having sailed through the Molucca Passage, between Lissamatula and Oby Major, you will be into the fair track of variable S. E. and Easterly winds, in the Pitt's Passage, which will be favorable for running to the westward. From this situation, any route that is thought most eligible for proceeding into the Indian Ocean, may be pursued at discretion. If it is intended to proceed by the straits of Sunda, Lombock, Allass, or Sapy, the track round the South end of Bouton, and through the straits of Salayer, will be proper; and from thence, a course must be steered for the intended strait. In crossing over for the strait of Sapy, care must be taken to allow for a westerly current, which generally prevails in the easterly monsoon; and in case of falling to leeward, proceed through Allass Strait.

Or through the Banda Sea and Ombay Passage. If bound to Europe, or to the western side of Hindoostan, a ship coming out of the Molucca Passage, may adopt the route through the Ombay Passage, by borrowing toward Oby Major, that she may with greater facility pass on the East side of Bouro, betwixt it and Manipa. From hence, she ought to steer to the southward close by the wind, which generally blows at E. S. Eastward in the Banda Sea, during the S. E. monsoon; although in the Pitt's Passage, it prevails at S. Eastward; and in the Molucca Passage, frequently at S. S. Eastward.

Crossing from Manipa, through the Banda Sea, with the wind at E. S. E., a ship that sails tolerably, will generally be able to weather Ombay; and after passing between it and Wetter, she may proceed along the N. W. coast of Timor, and pass out into the ocean betwixt Semao and Savu.

This is the shortest route from the Pitt's Passage into the ocean, where the steady S. E. trade wind may be expected; it is the quickest mode of clearing the islands, and in time of war, probably less danger is to be apprehended from enemies cruizers, than in any of the straits farther to the westward.

If a ship cannot weather Ombay, she may steer along its North coast, aud pass through

the strait of Alloo, or she may proceed on the same side of the other islands to the westward, then pass out by the strait of Flores, formed betwixt the East end of the island of this name, and the adjacent Islands Solor and Adenara. Should these straits be considered inconvenient, on account of their small breadth, and the rapid tides, she may continue to steer to the westward, keeping near the North coast of Flores, to avoid several dangerous shoals in the offing, then proceed through the strait of Sapy into the Indian Ocean.

## *EASTERN ROUTE to CHINA, by the PITT'S PASSAGE.*

### 1st. DIRECTIONS FOR SAILING FROM BATAVIA TO THE STRAITS OF SALAYER: ADJOINING ISLANDS, BANKS, AND DANGERS.

PITT'S PASSAGE, was first pursued by Captain Wilson, in the ship of this name, to whom it occurred, that an eastern passage might be made to China during the season that the passage through the China Sea was considered impracticable; by making sufficient easting with the N. W. monsoon, then blowing to the southward of the equator, to enable him to reach China with the N. E. monsoon, prevailing in North latitude. He sailed on the 23d of September, 1758, from Madras, and passed through among the Molucca Islands, into the Pacific Ocean, by Pitt's Strait. But the space more particularly distinguished by the name of the Pitt's Passage, is comprehended between the Islands Bouton to the westward, and Battanta and Salwatty to the eastward; being bounded on the South side, by Bouro, Ceram, Mysole, and their contiguous isles; and on the North side, by Xulla Bessy, Oby Major, and the chain of small islands stretching from thence to Pulo Popa, and toward the entrance of Dampier's Strait. General description of the Pitt's Passage;

The Pitt's Passage, is connected with the Pacific Ocean by 3 principal channels, the largest of which, is the Gillolo Passage, formed betwixt the Islands Gillolo and Waygeeooe; the next, Dampier's Strait, formed betwixt the latter island and Battanta; the third, Pitt's Strait, betwixt Battanta and Salwatty; and exclusive of these, Revenge Strait, betwixt Salwatty and the coast of New Guinea, which is intricate, and not frequented.

The route through the Pitt's Passage, and into the Pacific Ocean by the Gillolo Passage, or by Dampier's Strait, seems preferable to that through Macassar Strait, during the months of December, January, and February; for northerly winds and strong southerly currents, which greatly prevail in the latter strait during these months, are liable to render the progress through it very slow; whereas, the N. W. monsoon blowing to the southward of the equator, through the Pitt's Passage, is favorable for getting speedily into the ocean.

OMBAY PASSAGE, may be adopted by ships coming from Europe, it being much wider, and the winds generally more steady, than in any of the straits to the westward. A ship entering the Ombay Passage, may, according to circumstances, pass on either side of Sandalwood Island, and steer to the eastward between Timor and Ombay. Having rounded the East end of the latter, she ought to steer to the northward close by the wind, in order to weather Bouro; but if any difficulty appears in doing so, she may pass betwixt the East end of that island and Manipa, into the Pitt's Passage; then proceed to the eastward, as if she had come through the straits of Salayer. Ombay Passage.

To sail by the Strait of Sunda, toward the Pitt's Passage.

SHIPS from HINDOOSTAN, bound to China by the Pitt's Passage, in times of peace, often adopt the route through the strait of Sunda, which is more direct than the passage to the southward of Java. After entering this strait, they may steer to the northward of the Thousand Islands, and from the North Watcher, to the eastward through the Java Sea. But, when in want of water and refreshments, it may be prudent to touch for supplies at Batavia.

Departing from Batavia in the N. W. monsoon, and bound to the straits of Salayer, when clear of Edam, steer E. by N. $\frac{1}{2}$ N. for some time, in order to pass well to the northward of Bumkin's Island or shoal; this is more necessary during thick weather, when observations for the latitude are not obtained, because the current sets sometimes to E. S. Eastward. This danger will be described in one of the following sections, under the title "Straits to the eastward of Java," and it is situated about 30 leagues to the eastward of Edam, with Pulo Rackit to the S. S. W. of it, nearer the Java Shore. If the depth of water be increased to 30 fathoms, you will pass to the northward of Bumkin's Island or Shoal at a reasonable distance; there are, however, overfalls of 20 to 26 fathoms nearly close to it, therefore, do not borrow under 28 fathoms when passing in the night.

Bumkin's Island, and Pulo Rackit.

Geo. site of Carimon Java, and the adjoining isles.

CARIMON JAVA, in lat. 5° 50′ S. lon. 110° 34′ E. from Batavia by chronometer, is a high island with an elevated hill in the centre, bearing from Edam, East a little northerly, distant about 73 leagues. Adjoining to it, there are several small islands and rocks, some of which abound with deer, and fresh water may be got by digging on them. One of these, a flat woody island, is distant about $2\frac{1}{2}$ or 3 leagues to the W. N. W. of the principal island; their shores are mostly rocky, and some of them are connected by reefs. A ship may anchor among these islands in 20 to 24 fathoms ouze, and procure wood and water. The soundings about 6 or 7 leagues to the northward of them, are 31 to 32 fathoms.

Geo. site of Lubeck Island.

BABIAN, or LUBECK, ISLAND, (the body) in lat. 5° 49′ S. lon. 112° 48′ E., or 5° 56′ East from Batavia by our chronometers, corresponding with the observations of other navigators, bearing nearly East from Carimon Java, distant about 44 leagues, is of considerable extent, and very high toward the centre and West end, having some contiguous islets, and dangerous rocky shoals fronting its eastern part, to the distance of 3 or 4 leagues, with 25 and 30 fathoms water about them.

To sail to the anchorage.

Although this island is dangerous to approach at the S. E. and Eastern parts, on account of the extensive shoals, there is good anchorage in 10 or 12 fathoms mud, on the S. E. side of the N. E. point of the island. To avoid the shoals, a ship approaching this anchorage, must steer from the northward for the N. E. point of the island, from which a reef projects about 2 cable's lengths, with 13 fathoms water close to. Having rounded it, (with a boat a head sounding,) she may steer to the southward and anchor in the bay to the S. Eastward of the point, in 10 or 12 fathoms mud, with the Malay Town bearing W. by S. about 1 or $1\frac{1}{2}$ mile distant, South extreme S. $\frac{1}{2}$ E., North point of bay N. N. W. $\frac{1}{2}$ W. about a mile, and 3 islands from S. E. $\frac{3}{4}$ S. to S. E. $\frac{1}{2}$ E., distant off the nearest shore $\frac{1}{2}$ a mile, and a large cable's length from the mud bank in the bay. This is the situation where the Royal George anchored in February 1766, and procured a supply of good water, buffalos, and poultry: some bullocks, with rice or paddy and calavances, may also be obtained; this place is, however, not frequented by English ships.

Geo. site of the Arrogants Shoal.

ARROGANT'S SHOAL, in lat. 5° 12′ S., lon. 113° 0′ E. by mean of the chronometers of H. M. ship Arrogant, and those of the Dover Castle, corresponding to 4 miles, is a dangerous coral shoal, about 11 leagues to the N. N. Eastward of Lubeck, discovered by the Arrogant, on the 23d of January, 1802. The boat examined it, and found it to extend N. W. and S. E. about $\frac{1}{4}$ of a mile, with depths of 5 and 6 feet where she could approach

with safety, there being breakers on it at the time. The depths close to the shoal, were from 5 to 12 fathoms, and 25 fathoms at the distance of a cable's length.

This shoal is greatly in the way of ships running to the eastward in thick weather, and should be avoided by keeping within 6 or 7 leagues of Lubeck, or in lat. 5° 25′ to 5° 30′ S. Passing from abreast of Carimon Java, 32 and 33 fathoms is a fair track; and being 6 or 7 leagues to the northward of Lubeck, an E. by S. ½ S. course will carry a ship 3 or 4 leagues to the southward of Great Solombo, in soundings from 32 to 37 fathoms; the depths then decrease, to 20 and 21 fathoms about 7 leagues to the S. Eastward of this island.

Great Solombo.

GREAT SOLOMBO, or NOESA LOOMBO (i. e. CATTLE ISLAND,*) bearing from Lubeck about E. 8° N. distant 33 leagues, is an island of considerable extent and moderate height: the hill on the S. E. part being of a square shape, with a flat summit, is discernible about 8 leagues from the deck; but low land projects from it a considerable way, and forms the greater part of the island. I made the hill in lat. 5° 33′ S., lon. 114° 28′ E., or 7° 36′ East from Batavia by chronometers, agreeing with Captain Heywood, who made it 12° 13′ East from Malacca by the same means.

Geo. site.

Little Solombo.

LITTLE SOLOMBO, situated about 3 leagues to the northward, on the meridian of the former, and nearly of the same extent, is a low woody island, its eastern extremity bearing N. 2° E. from the hill of Great Solombo: the channel between them is 4 or 5 miles wide, and thought to be safe, through which the Friendship passed in December, 1802, proceeding from Batavia toward Amboina.

Channel between them.

Geo. site of Arentis;

ARENTES ISLAND, in lat. 5° 10′ S., lon. 114° 36′ E., bears N. 20° E. from Little Solombo, about 6 leagues distance; there is a little islet adjoining to its South end, and a small bay with a sandy beach at that part. On the West side, this island ought to be approached with great caution, on account of the rocky spot thought to lie about 3 leagues off it, already mentioned in the directions given for sailing from Batavia toward the strait of Macassar: but the South end of the island, may be passed at the distance of 3 or 4 miles, in 13 or 14 fathoms hardish bottom, the channel betwixt it and the Little Solombo being safe.

adjacent danger.

To sail from Great Solombo eastward.

Having passed to the southward of Great Solombo, steer to the eastward in the parallel of lat. 5° 45′ S., and endeavour to keep between lat. 5° 34′ S. and 5° 50′ S., if observations are not obtained; for the current sometimes sets to the N. E, toward the entrance of Macassar Strait. This latitude ought not to be exceeded to the southward, on account of the Kalkoon Islands and the shoals adjoining, for they are low islands stretching to the northward of the large island Kangelang, as far as lat. 6° 10′ S., and situated in about lon. 115° 47′ E. After running about 50 leagues eastward of Great Solombo, when the channel to the southward of the Brill Shoal is to be pursued, edge a little more to the southward, keeping in about lat. 6° 16′ S. in passing betwixt the South end of that shoal and the northernmost of the POSTILLIONS. The N. Westernmost of the latter islands, is in lat. 6° 32′ S., lon. 118° 48′ E., or 11 miles to the westward of the Brill Shoal, by a view of it we had from the mast-head of the Anna, in passing between them.

Geo. site of Kalkoon Islands;

Geo. site of N. Western Postillion Islands.

To pass between them and the Brill Shoal.

The mid-channel track, is about 6° 16′ S., and when the weather is clear, you may borrow toward the Brill Shoal in the day time, and pass in sight of its southern extremity; but to run through betwixt it and the Postillions during the night, would be imprudent if the latitude of your ship is not correctly known.

* It is said to abound with wild cattle, and that fresh water may be got at these islands; but Captain Sheldrake, in a brig bound to Port Jackson, who anchored at Great Solombo, in order to procure water and refreshments, was cut off, and his vessel taken by the Malays, which shews the impropriety of touching at this place.

North Channel.

THE NORTH CHANNEL, formed betwixt the Brill Shoal and the Island Tanakeka, seems preferable to the former, particularly in the N. W. monsoon; for in clear weather, the S. W. part of Celebes may be seen from the North end of the shoal, and the Tonyn and Tanakeka Islands, which bound the North side of the channel, will answer as guides to point out a ship's situation. But prior to giving directions for sailing through this channel, it is necessary to describe briefly, the neighbouring banks and dangers.

Geo. site of Noesa Comba.

NOESA COMBA, in about lat. 5° 15′ S., lon. 117° 9′ E., is a low island situated to the southward of the Islands Noesa Seras, already mentioned in the directions given for sailing from Batavia toward the Strait of Macassar. These form the S. Westernmost group of the Celebes Archipelago, having irregular soundings about them; and a shoal bank is thought to stretch from Noesa Comba to the southward, rendering a near approach to it on that side unsafe. The Sibbald, Capt. Forbes, on the 28th of March, 1816, had soundings from 20 to 7 fathoms coral, the least water, upon a bank which appeared not to be very extensive, although she seems to have passed over its western part, and deepened off to 60 fathoms no ground steering N. N. W. When in 7 fathoms on it, she was in lat. 5° 46′ S., lon. 117° 15′ E. by chronometers from Batavia; and it probably extends from lat. 5° 43′ to lat. 5° 47′ S., forming the southern limit of the banks to the southward of Noesa Comba. CALOEOHIJ, or Rotterdam Island, is said to have good water on it, and is distant about 9 leagues nearly East from Noesa Comba, there being a safe channel betwixt them, very little known to English navigators.

Caloeohij.

Geo. site of the Hen and Chickens.

HEN AND CHICKENS, consist of a group of low islands, some of which are detached considerably from each other, being of greater extent East and West than generally represented. They form the southern group of a chain of islands, which stretches from them a great way to the northward. By mean of several ship's observations, (their chronometers agreeing within 4 or 5 miles of each other) the southernmost islands of the Hen and Chickens, are in lat. 5° 28′ S., lon. 117° 54′ E.

Bank adjoining.

A coral bank extends around these islands to a considerable distance, with very irregular depths on it in some places: it projects about 4 or 5 leagues to the southward of the islands, the depths on the southern part, being generally from 14 to 25 fathoms, but as there is only 4 and 3 fathoms about 3½ leagues to the southward of these islands, it is prudent to keep at least 4 or 5 leagues from them; particularly, as the Mangles in December, 1805, saw the water much discoloured a-head, when in 15 fathoms about 3 leagues off them, which obliged her to haul to the southward.

Geo. site of Saflanaff.

ZALINAF, SAFLANAFF, or LAERS ISLAND, in about lat. 5° 31′ S., lon. 118° 25′ E. by chronometers, bearing about E. ½ S. 10 or 11 leagues from the southernmost islands of Hen and Chickens, is a low woody island, and the southernmost of a group situated on the North end of the Laars Bank. This island is surrounded with breakers, and ought not to be approached; it and the other islands may be seen 5 leagues.

Geo. site of the Laars Bank.

LAERS, or LAARS, (the BOOT) is an extensive coral bank, (or range of banks) commencing at the Island Saflanaff, and stretching about 5 leagues to the S. Westward; it then takes a southerly direction, and extends to lat. 5° 52′ S. or 5° 54′ S. The western verge of these banks is in about lon. 117° 58′ E., and the eastern part in lon. 118° 26′ E. or 3° 58′ E. from Great Solombo by chronometers, and nearly South from Saflanaff: but in some parts, their extent East and West, appears to be much less.

Ships generally cross over the Laars Bank, in lat. 5° 45′ to 5° 50′ S., although it is here, *probably* of greater breadth and shoaler, than in about lat. 5° 40′ S.

Captain Heywood, in H. M. S. La Dedaigneuse, on the 19th of December, 1803, had

soundings of 13 to 7 fathoms, in lat. 5° 48′ S., lon. 118° 25′ E., or 3° 57′ E. from Great Solombo by chronometers, and immediately deepened off the eastern edge of the Bank to no ground: the bottom had been seen several times, during the preceding run of 7 or 8 leagues to the eastward.

The True Briton, in lat. 5° 47′ S., had soundings of 16 to 11 fathoms, in a run of 4 leagues to the eastward, or from lon. 118° 5′ to 118° 17′ E., when passing in January, 1802, and she saw the Hen and Chickens, and Saflanaff.

The Ruby, in lat. 5° 47′ S., and 48 miles West of Tanakeka, or in lon. 118° 31′ E., had from 10 to 6 fathoms coral rock in 1799, in a run of 2 or 3 miles. The Revenge and Glatton, in lat. 5° 53′ S. got into 5 fathoms; and the Althea in 1806, had 10 and 11 fathoms in lat. 5° 53½′ S., lon. 118° 29′ E. or 1° 59′ West from Middle Island in Salayer Straits, by chronometer.

The Apollo, Capt. Tarbutt, on the 16th of March, 1813, in lat. 5° 48′ S., lon. 118° 15′ E. got into 12 fathoms coral, Saflanaff Island seen from the mast-head bearing N. E. by N., which seemed to be a bank about 1 mile in extent: a little farther to the eastward, she got no ground, but seeing a proa or junk apparently fishing on another coral bank, 2 boats were sent to sound, and found 10 fathoms between the ship and the proa, and 6 fathoms coral around the latter. The ship had also from 15 to 6½ fathoms in crossing over this bank, which appeared to extend ½ a mile East and West, and is situated in lat. 5° 48′ S., lon. 118° 20′ E.

Where these last mentioned 5 ships had shoal soundings, may probably be small spots detached from the eastern edge of the Laars Bank, or it may be only the termination of its southern extremity.

The Anna, in December, 1806, after passing in sight of the Hen and Chickens from the poop bearing North, steered E. by S. and E. ½ S. 24 miles, then got a few casts of 12 to 25 fathoms, and immediately afterward no ground: the observed lat. 5° 41′ S., lon. 118° 18′ E. by chronometer, and a low woody island, supposed Saflanaff, bore N. E.

The Mangles, in December, 1805, saw 1 of the islands of Hen and Chickens bearing N. by E. 2½ or 3 leagues, and had 15 fathoms water; shortly after, another island was seen bearing N. E. with the appearance of shoal water E. by N., which obliged her to haul off South, and deepened to 25 fathoms in a run of 3 leagues, then bore away East at noon. The weather being thick, and blowing strong, no observations were obtained, and these islands were mistaken for Saflanaff and the other islands on Laars Bank: but after running East 20 miles from noon, the Island Saflanaff was seen bearing N. N. E., 5 or 6 miles distant, with many breakers to the East and westward of it, and shoal water bearing E. N. E. At this time they had 17 fathoms, and shoal discoloured water was also discerned outside, extending from S. W. to S. S. W., with an apparent clear passage from E. S. E. to E. by N.; through this, she was forced to push, it being impossible to weather the southern shoal, from the violence of the gale; and the least water in running through, was 16 fathoms. When through this channel, they hauled up under the lee of the outside shoal, and had no ground 50 fathoms. Dangers on it.

This ship's passage over the Laars Bank, seems to have been in about lat. 5° 34′ or 5° 35′ S., or within 4 or 5 miles of the Island Saflanaff, which is too far to the northward; for, although she found a safe channel, the shoal on the outside of it is probably dangerous, and appears to be in about lat. 5° 35′ or 5° 36′ S.

The Warwick, on the 5th of January, 1761, with Saflanaff bearing N. E. by N., distant 2 leagues, and another island E. N. E., got into ¼ less 5 fathoms and anchored; the water appeared very shoal all round, and the boat in sounding, found the deepest water betwixt the ship and Saflanaff, being there, from 7 to 12 fathoms. While at anchor in this situation, a hard squall made her drive, and she had instantly 9 fathoms, next cast no ground 50 fathoms. This ship approached too near these islands; the shoal bank on which she anchored, is probably not far from the place where the Mangles saw the appearance of danger. The Dutch

frigate, Zephyr, got into 4½ fathoms, the above mentioned island bearing E. N. E., seen by moon-light, and anchored immediately, but the anchor slipped off the shoal into 80 fathoms no ground. The Sibbald, on the 1st of April, 1816, having light S. E. winds, passed over the Laars Bank far to the northward, and at midnight got into 9 fathoms coral in lat. 5° 35′ S., lon. 118° 32′ E., then tacked to the southward and soon deepened; the Island Saflanaff having been seen on the preceding evening from the mast head bearing N. N. W.

It has generally been thought, that in proportion as the distance is increased from Saflanaff to the southward, the depths on the bank likewise increase; which appears not to be the case. In lat. 5° 40′ S. to 5° 41′ S., the Anna in crossing, got only a few casts of soundings, least water 12 fathoms, the bank being very narrow in that part. Other ships have crossed over nearly in the same latitude, and had no less than 11 or 12 fathoms water: whereas, it appears by the extracts given above, that several ships in crossing it to the southward of lat. 5° 47′ S., have experienced shoal soundings from 7 to 5 fathoms; and in this part, Captain Heywood, found the bank to be of great extent East and West, formed of spits or patches of coral and sand.

Directions for passing over this bank.

Five Fathoms Bank.

FIVE FATHOMS BANK, is the southernmost shoal patch yet known, of those numerous coral patches, which appear to form the southern extremity of the LAARS BANK. On the 21st of June, 1813, the Apollo, returning from Amboina, at ½ past 7 A. M. struck soundings of 5 fathoms on this bank in lat. 5° 52′ S., lon. 118° 20′ E.; afterward in crossing over it, she had 8, 7, 6½, 5¾, then deepened gradually to 15 fathoms, and to no bottom in 18 minutes after first getting on the bank, steering West.

Best track to be pursued.

From what has been stated, it seems, that the best track to cross over the Laars Bank, is betwixt lat. 5° 40′ and 5° 46′ S., if your situation is correctly known by observation; but in thick weather, a wide birth should be given to the islands, by keeping well to the southward; for there is thought to be no danger on the southern parts of this bank, or banks. It is, however, unpleasant in a large ship, to get into 5 or 6 fathoms when there is much swell, which may possibly happen; the track between lat. 5° 40′ and 5° 46′ S., seems therefore, the best to be pursued by large ships.

Geo. site of the Tonyn Islands.

TONYN ISLANDS, like the other islands adjacent, are low and woody; the S. Westernmost is in about lat. 5° 31′ S., lon. 118° 36′ East, bearing East from Saflanaff 9 or 10 miles distant. The easternmost Tonyn Island, in about lat. 5° 31′ S., lon. 118° 46′ E. by chronometer, bears East from the S. Western 1, distant 10 miles; and to the northward of the latter, another island is situated. The 2 westernmost islands are surrounded by a dangerous shoal, which projects several miles to the southward of the S. Westernmost island; then it stretches eastward, nearly to the easternmost island. H. M. S. Swallow, by borrowing toward these islands, got into 3 fathoms coral rocks, on the edge of this shoal.

The Sibbald, on the 1st of April, 1816, at noon, saw the westernmost Tonyn Island from the deck, bearing N. by W. ¾ W., distant 4 or 5 leagues, the easternmost island then in sight from the fore-yard, bearing from N. E. ½ N. to N. E. ½ E., observed lat. 5° 44′ S., lon. 118° 43′ E. by chronometer, and they both appeared low, and covered with trees.

On the 2d of April at sun-set, the westernmost Tonyn Island was seen from the mizen-rigging bearing W. ½ N., and the easternmost island N. W. by W., distant 8 or 10 miles; from this situation, she steered N. E. by E. 18 miles with a S. Easterly wind, and shoaled suddenly at midnight from no ground at 60, to 5 fathoms, immediately tacked to the southward, and deepened to 5¼, 7, 9, 16 fathoms, then no ground in 6 minutes. She made this shoal in about lat. 5° 27′ S., lon. 119° 5′ E., which is probably the shoal bank extending westward from the Three Brothers.

Geo. site of Tanakeka;

TANAKEKA, or TUNIKIK ISLAND, in lat. 5° 34′ S., lon. 119° 24′ E. by chrono-

meters from Great Solombo, bearing nearly East from the easternmost Tonyn Island, 11½ or 12 leagues distant, has a level appearance, and may be seen 6 or 7 leagues. It is separated from the S. W. part of Celebes by a navigable channel, about 3 or 4 miles wide, with soundings from 6 fathoms toward the main, to 10 or 12 fathoms near the reef that lines the East side of Tanakeka, soft bottom in some parts, but frequently coral. In passing through, keep nearly in mid-channel, or rather nearest to Tanakeka, for the Dutch frigate, Zephyr, passing through in soundings of 8 and 9 fathoms, got suddenly into 6, then 3 fathoms, close to breakers, and immediately deepened to 11 and 13 fathoms in hauling over for Tanakeka, the North point of which bore W. S. W. when on the shoal, and the distance from the shore of Celebes appeared to be nearly 3 miles. Regular soundings project from Tanakeka in a southerly direction, it being safe to approach on that side; but from the islands called Three Brothers, which lie to the N. W., there is a rocky bank stretching out to the westward, with shoal water on its northern part.

adjacent islands.

Channel within it.

BRILL SHOAL, is very dangerous, being steep to, and directly in the track of ships steering eastward for the Straits of Salayer. Returning from China in the Anna, we made this shoal unexpectedly, on the 7th of August, 1793. By noon observation when the South end of the shoal bore W. by N., I made its southern extremity in lat. 6° 5′ S., lon. 119° 0′ E.; or 1° 28′ West from Middle Island in Salayer Straits, and 4° 32′ East from Great Solombo by chronometer. The northern extremity of the shoal is in about lat. 6° 0′ S., or 6° 1′ S.; by a good view of it from the mast-head, its extent appeared to be about 4 miles North and South, and rather less from East to West. Having a fresh breeze, with a considerable swell, there was a continued chain of breakers around the verge of the shoal; but within the breakers, the water was smooth, of a light green colour. Although the sea *probably* breaks very little upon the Brill Shoal during fine weather, it must be easily distinguished in day-light, by the discoloured water. Besides, the rocks on the N. W. part, are nearly even with the water's edge; as the Pitt's boat went to it in 1792, during a calm, and found only 2 feet water in some places. This shoal appears to be about 10 or 11 leagues East of the meridian of the eastern verge of the Laars Bank.

Geo. site of the Brill Shoal

DEPARTING from GREAT SOLOMBO, when the channel to the northward of the Brill Shoal is to be followed, steer to the eastward about 50 leagues, keeping between lat. 5° 36′ and 5° 50′ S. When the meridian of the Hen and Chickens is approached, cross over the Laars Bank, in the parallel of 5° 43′ S. if observations can be obtained for the latitude, by day or by night. But if the latitude is not correctly determined, it will be prudent to keep a little farther to the southward, to avoid the dangers adjacent to the islands; and in such case, it seems prudent not to pass the Brill Shoal in the night, unless the latitude is ascertained within a few miles, as the currents are uncertain, and sometimes set strong to the southward.

To sail from the Great Solombo, to the northward of that shoal, and to the Straits of Salayer.

During the day, when the weather is favorable, keep in lat. 5° 43′ S. as recommended above, to get a sight of the islands from the mast-head or poop; and if the Tonyn Islands are seen, they will point out the approach to the meridian of the Brill Shoal. Having passed the islands, continue an easterly course for the S. W. end of Celebes, or to get a sight of Tanakeka at 4 or 5 leagues distance in passing.

THE S. W. END OF CELEBES, called LAYK, or LAYKEN POINT, in lat. 5° 37′ S., lon. 119° 33½′ E., should have a birth of 3 miles, on account of a coral bank projecting from it 1½ or 2 miles, but the water shoals near it to 15 or 12 fathoms; and there are 5 and 4 fathoms on its edge. When this coast is approached, pass along it about the distance of 2 leagues, by steering well into Bonthian Bay when the Mansfield's Shoal is approached, if you intend to pass within it; and having brought Bonthian Hill to bear N. by W. ½ W. or

Geo. site of the S. W. end of Celebes.

N. N. W., you will be clear of it, and may then haul off shore, to pass through the Straits of Salayer, between Middle and South Islands.

South coast of Celebes.

South Coast of Celebes, is fronted by a bank of tolerably regular soundings, stretching 2 or 3 leagues out from it, in some places, which is a guide in sailing along in the night; but off the bay of Baakele, situated to the eastward of Layken Point, there is deep water. Turatte Point in lat. 5° 39′ S. lies 3 leagues eastward of Layken Point; and inland to the N. W. of Bonthian Bay, there is a mountain of *astonishing* elevation, from whence the land slopes down by various ridges, until it becomes low in some parts close to the sea.

Boele Comba Hill.

BOELE COMBA HILL, in lon. 120° 9′ E. by chronometer, is not very conspicuous when first seen in coming from the westward, but when abreast, it becomes an excellent mark, being a high conical hill, standing by itself on the low land near the sea, to the N. W. of Boele Comba. There is good anchorage in 7 or 8 fathoms sandy bottom, about 2 miles off the village of Bonthian, at the North part of the bay of that name. Boele Comba, also affords good anchorage, which is a small Dutch settlement farther to the eastward, with the hill over it bearing N. N. W. ¼ W., and the flagstaff of Boele Comba N. N. W. 2½ or 3

Anchorage.

miles, in 6½ or 7 fathoms sand and mud. The Sibbald anchored here on the 7th of April, 1816, in 11 fathoms sand, about 2½ miles off shore, Boele Comba Hill bearing N. W. ½ N., Point Lassoa or eastern extreme of Celebes (called Berak by the natives) E. ½ S., West extreme of Celebes W. ½ S., the flagstaff of Boele Comba Fort N. W. by W.; here she lay 2 days and filled up her water, then proceeded along the North coast of Flores toward Amboina. H. M. ships, Powerful, Terpsichore, and Drake, touched here on the 17th of December, 1806, but could not procure good water or refreshments at this time. They however, discovered Denneloang River on the East side of Boele Comba Bay, navigable by

Denneloang watering river,

long boats a considerable way up, except at last ¼ ebb. Here, they watered speedily, by sending the boats about ¼ mile up the river, and filling along side: a few buffalos and some fruit, were also procured from the natives, who inhabit several villages near the banks of the river, 1 side of which is under the controul of the Dutch, and the other under the king of Boni.

anchorage off it.

The Drake at anchor, about a mile off the mouth of this river, in 20 fathoms very stiff mud, and good holding ground; made the lat. 5° 34′ S. by observation, Boele Comba Village bearing West, the North point of the river's mouth N. 9½° E., S. E. point of Celebes E. 1° S., North Island S. 73° E., South Island S. 65° E., and the North point of Salayer S. 58½° E.

A coral reef projects near 2 miles from the western point of the watering bay, and is steep to; ships ought, therefore, not to anchor under 20 fathoms, for the Powerful let go her anchor in 17 fathoms, and swung into 4 fathoms. There are fresh land, and light sea breezes, in this bay during the N. W. monsoon, whilst the wind in the offing is blowing strong through the Straits of Salayer.

Mansfield's Shoal.

MANSFIELD'S SHOAL, is of considerable extent, on which the ship of this name had 3¾ fathoms coral rock, on 16th of December, 1780, with a peaked hill * bearing about N. ½ W., then distant 4 or 5 leagues from Celebes shore; and it is thought to bear about West from South Island in Salayer Strait, distant 5 or 6 leagues.

This ship got suddenly off the shoal into deep water, and the boat was sent to examine it. With the Peaked Hill bearing from N. ½ W. to N. by W., South Island East, Salayer E. by S. to S. E. by S., and the extremes of Celebes from N. E. by E. to N. W. by W.,

* Thought to be Boele Comba Hill, which is called sometimes Bonthian Hill, and lies to the N. N. Westward of Boele Comba; but that called Boele Comba Mountain by the Dutch lies in lat. 5° 23′ S., and is 5 miles to the Eastward of the flagstaff of Boele Comba.

distant 4 or 5 leagues, she had mostly regular soundings from 5 to 10 fathoms on the shoal. But it being extensive, she must have missed the shoalest parts, for where the ship got upon it there was less water; and on some parts of it, the depths are said to be from 3 to 3½ fathoms.

The Sibbald, on the 5th of April, 1816, at 10 A. M. steering East, got suddenly from having no soundings, into 10 fathoms coral, and immediately anchored, with the northern extreme of Salayer appearing like an island bearing East, the centre of South Island E. ¾ N., Berak Point or South extreme of Celebes N. E. by E., Boele Comba Hill, or Peaked Hill on Celebes N. by W., and Middle Island just seen from the mast-head bearing about E. by N. ¾ N. The boat found 6¼ fathoms near the ship, but not less; weighed, and kept her a-head sounding, and steering E. by N. ½ N., deepened in a run of 2 miles to 60 fathoms no ground.

These soundings appear to have been on the Mansfield's Shoal, although not on its shoalest part, and the meridian altitude of a star at 4 A. M. made it in lat. 5° 45′ S. The Dutch frigate Maria Reygersbergen, places this shoal in lon. 120° 13½′ E. by chronometers. Geo. situ

There are soundings contiguous to it, which soon deepen off to the southward to no ground; but they extend from the shoal to the Celebes shore.

Exclusive of the Mansfield's Shoal, there is *said* to be 2 coral banks farther to the eastward, on 1 of which, on the 23d of January, 1800, the ship Thomas had 7½ fathoms, and saw the bottom very plain, with Peaked Hill N. W. ½ N., and Middle Island E. by S. ½ S., distant about 2 leagues off the Celebes Shore: she hauled from it to the southward, and deepened quickly to 40 fathoms no ground. The ship Amboina, on the 9th of February, 1800, tacked close to rippings or breakers on the other, with Middle Island bearing East, which is a circular shoal, about ½ a mile in extent, with a small rock even with the water, and this was of a light green colour upon the shoal. When it bore South about ½ a mile distant, Boele Comba flagstaff bore N. W. 9 or 10 miles, West extreme of Celebes W. by N., and its eastern extreme E. ¾ N., North Island E. ¼ N., and the North point of Salayer S. E. ¾ E. Other coral banks.

AMBOINA SHOAL, was seen by Captain T. Harington, of the Scaleby Castle, from whose journal the following description is taken. Amboina Shoal.

On the 17th of January, 1812, about 11 A. M., discovered shoal water on the larboard bow when steering E. by. S., put the helm down with the hope of clearing it to the southward, but immediately afterward seeing coral rocks under water, close to the ship, on the weather quarter, up helm again and providentially cleared the shoal, although not without touching on it, at the same time there appeared to be 4¼ fathoms along side by the lead.

We had no soundings till close upon the shoal, and the water over it was of a *bright green* colour, with a strong rippling, but not breaking sufficiently to attract notice at any distance. The shoal appeared to be about ½ a mile across in an East and West direction, and immediately after clearing it, Peaked Hill (indistinctly seen) bore N. W.; Point Lassoa E. by N., body of North Island E. 4° N., Middle Island E. ¾ S., body of South Island E. 21° S., North point of Salayer E. 24° S., and the S. W. point of Hog Island S. ¾ E. From these bearings, it is certain, that this shoal is not the danger seen by the Mansfield, for it lies nearer to the coast of Celebes, and farther to the eastward.

Exclusive of the Mansfield's and Amboina Shoals, which are *now* known to be dangerous, other banks lie to the eastward of the former, at a greater distance from the coast of Celebes than hitherto supposed, as will appear by the following extract from the Sibbald's journal; but they are probably clear of danger. Other banks.

April 6th 1816, having anchored on the Mansfield's Shoal at 10 A. M. yesterday, after weighing at 11 A. M. steered E. by N. ½ N. 3 miles with a light air, and got no bottom till ½ an hour past noon with 100 fathoms line, then had 22 fathoms gravel, with several casts afterward from 25 to 46 fathoms; when we had no ground 100 fathoms outside of the western edge of this bank, South Island bore E. ½ N., South Point of Celebes or Berak Point N. E. by E., Boele Comba N. N. W., Middle Island seen from the mizen shrouds E. ¾ N. From hence, steered about East 3 miles, and had no soundings till 5 P. M., then got ground 26 fathoms, decreasing to 19 fathoms sand and gravel, and anchored, Berak Point N. E. ½ E., North Island N. E. by E., Boele Comba Hill N. N. W. ¼ W., Middle Island just in sight E. by N. ½ N., North Point of Salayer E. by S., South Island East, South extreme of Celebes nearly on with the North end of North Island bearing N. E. ¾ E.

Whale Shoal. WHALE, called SONTELAND'S ROTZEN, by the Dutch, is a shoal about ¼ mile in extent, having only 2½ fathoms sharp rocks on it in some places, with soundings contiguous, and between it and Hog Island, from the N. W. part of which, it is distant about 4 miles. From its shoalest part, the North end of Salayer bears N. N. E., and the South end
Hog Island. of the same S. by E., on with Hog Island; which is a low island of considerable length, stretching parallel to the West side of Salayer, at a small distance.

Salayer Straits. SALAYER STRAITS, called BOEGEROENS, by the Dutch, formed betwixt the North end of the island of this name, and the point of Celebes opposite, are separated into several channels by 3 islands called generally, North, Middle, and South. The South point of Celebes, which bounds the North side of these Straits, is of round form, moderately elevated, covered with trees; and the coast from thence westward, embracing the concavities of Boele Comba and Bonthian, is low near the sea, with high mountains inland to the N. Westward. North Island is low and level, and when far off shore, coming from the westward, it is seen on with the South Point of Celebes; but when viewed from the eastward, a wide space appears between them. The channel betwixt the Point of Celebes and North Island, is not frequented by ships, although said to have 16 and 24 fathoms soft ground in it.*

Geo. site of Middle Island. MIDDLE ISLAND, the smallest of the 3, but nearly of the same height as the others, may be discerned about the distance of 5 leagues from the deck, and is bold to approach, being steep to. I made it in lat. 5° 40′ S. by noon observation, when bearing West, and in lon. 120° 28′ E. by chronometers, or 13° 36′ East of Batavia, corresponding exactly with several other navigators.† There is a safe channel on either side of Middle Island; that between it and North Island, is about 3 miles wide, and since the ship Amboina found a coral bank in it, the South channel has been preferred. This ship, passing between Middle and North Islands, on the 10th of February, 1800, got suddenly into 14, then into 8½ fathoms rocks, with the body of Middle Island bearing South, distant about 2¼ miles, and in 3 casts steering S. E., she deepened to 55 fathoms. There is *probably* not less than 7½ or 8 fathoms water on this bank, and it seemed to be of small extent.

* A Dutch officer at Batavia, stated to me, that there were some rocks in it, that it was never used by them; and also, that a Dutch ship was lost, in endeavouring to push through betwixt the North point of Salayer and South Island.

† This longitude of Middle Island, is probably a near approximation to truth; for it is *remarkable*, that Captain Heywood, made it in lon. 120° 28′ E. by chronometer from Malacca in 1803, and Captain Richardson in the same year, made it 16° 2′ East of Pedro Branco by chronometers, which places it in lon. 120° 27½′ E. The Mangles in 1805, made it 16° 2½′ East of Pedro Branco by chronometer, or in lon. 120° 28′ E., and Captain Clarke of the True Briton in 1797, made it in lon. 120° 28′ E. by chronometers. In 1802, the same ship, made it 3 miles more to the westward by chronometers. The Asia in 1805, made it in 120° 30′ E. by chronometers; and the Anna made it in the same lon. in 1806.

The channel between Middle and South Islands, is about 4 or 5 miles wide, without soundings, clear of danger, and is generally adopted by ships passing through these straits.

South Island is larger than Middle Island, and rather higher: a coral flat projects from it to the S. W. and Southward, and another fronting it, stretches out from the North end of Salayer, but to appearance, there is a narrow gut between them, which *probably* would afford a passage to a ship in a case of great necessity, by the help of a good look out kept for the shoals, from the mast-head.

Salayer Island.

SALAYER ISLAND, (called BOEGEROENS by the Dutch,) extending nearly North and South about 10 leagues, is of moderate height, well cultivated, and abounding with inhabitants. The North point, fronting South Island, is in lat. 5° 49′ S., and on the same meridian; the land over the point being rather higher than the islands adjacent, and joined to the body of Salayer by a low neck of land, makes the North end of Salayer also appear isolated, when first seen either from East, or westward. Several proas are generally observed about the villages at the North part of Salayer; and on the N. W. side, about 3 or 4 miles to the S. S. Westward of the South point of South Island, there is a considerable village, with shoals and rocks stretching out from it. The Althea anchored in 28 fathoms, close to the shoals about 2 miles off shore, in August, 1806, with a view to procure refreshments at this village, but she could only get a few cocoanuts, the inhabitants being afraid of the Dutch getting intelligence of an English ship having touched there. The bottom was so rocky, they could not purchase the anchor, and were obliged to cut from it. When at anchor, Middle Island bore N. 16° E., the East end of South Island and North point of Salayer nearly touching N. 43° E., West extreme of Salayer S. 5° W., Bonthian Hill N. 42° W.; but a ship should not anchor here.

Passage on the East side of it.

TONIN, or BAGLAWANG ISLANDS, are of moderate height, and stretch out a great way to the southward of the South end of Salayer; and many islands and shoals, stretch to the S. E. and Eastward of it, at a considerable distance, called Tiger Islands and Shoals; but this part is little known, and generally avoided by navigators. There seems, however, to be a safe passage on the East side of Salayer, for the Anna fell in with an American ship off Xulla Bessy, on the 31st of December, 1806, which had been 4 days from Allass Strait, and 2 nights of that time laying to, with strong westerly gales. Being unable to fetch the straits of Salayer, she bore away round the South end of that island, and passed along the East side of it, to the northward.

To sail through Salayer Straits.

To sail through the straits of Salayer, if you intend to pass outside of the Mansfield's Shoal, keep out of soundings, about 5½ or 6 leagues from the coast of Celebes, when Bonthian Hill bears between N. ½ E. and N. by W.; and when the North end of Salayer is discerned, by keeping its extreme point East, but nothing to the southward of this bearing, you will pass clear on the South side of the shoal. When Bonthian Hill is visible, and brought to bear N. by W. ½ W. or N. by W., steer direct for Middle Island, and pass betwixt it and South Island, borrowing on either side, as the wind, or circumstances require.

During the night, or in light winds, the route along the coast of Celebes, inside of the Mansfield's Shoal, is preferable: here, the depths being moderate for anchoring if necessary, with regular soundings extending out about 2 or 3 leagues from the shore, answers as a guide in the night, or in thick weather; whilst at such times, no marks are visible from the outer channel. But in the day, when strong winds sometimes blow between West and S. W., the passage outside of the Mansfield's Shoal ought to be adopted.

To proceed by the Inner Passage, after having approached the coast of Celebes, you ought to preserve the distance of 4 to 6 miles from it, until Bonthian Hill is brought to bear N. by W. ½ W.; being then past the Mansfield's Shoal, edge out 4 or 5 leagues from the shore, before the hill is brought so far westerly as N. W. by N., or by the time the islands in Sa-

layer Straits are all bold in sight from the deck. Or as soon as Middle Island is seen boldly from the quarter deck, you should edge off, until it bears E. by N., to avoid the Amboina Shoal, then steer to pass through, about mid-channel betwixt-Middle and South Islands.

Boni Bay. BONI, or BUGGES BAY, begins on the East side of the South point of Celebes, which forms the straits of Salayer, and stretches about 3° to the northward, into the middle of that island. The navigation of this bay is dangerous and intricate, from the numerous shoals it contains; and being little known, a ship intending to proceed into it in order to trade, must be guided by a good look out, with boats sounding a-head; there being moderate depths for anchorage among many of the shoals. The river and principal town of Boni, is situated near the bottom of the bay on the West side, in about lat. 3° S., off which, there is good anchorage in 8 or 10 fathoms water.*

## 2d. INSTRUCTIONS FOR SAILING THROUGH THE PITT'S PASSAGE: CONTIGUOUS ISLANDS, AND COASTS.

Geo. site of Cambyna. CAMBYNA, is a large island inhabited and cultivated, with a high peak in the centre, declining from thence to each end, and is situated to the westward of the South entrance of Bouton Strait. The peak is in about lat. 5° 21′ S., lon. 122° 1′ E. or 1° 33′ East from Middle Island in Salayer Straits by chronometers; and the South end of the island, is in lat. 5° 30′ S. Off the S. E. end, there are 2 small isles, and about 2 miles from its S. W. end, lie 3 more isles, very low, with breakers projecting 2 or 3 miles from them; these ought not to be approached, particularly in the night.

Geo. site of South Island. SOUTH ISLAND, in lat. 5° 40′ S., lon. 122° 30′ E., bearing nearly West from the South end of Bouton, distant about 12 miles, is of moderate height, formed of sections, or strata of rock; and being on with the South part of Bouton in coming from the westward, it is not discerned until nearly approached. There are some small isles adjoining; 2 of them lie to the northward of South Island, fronting the South entrance of Bouton Strait, and are generally called Middle and North Islands.

Geo. site of Hegadis. HEGADIS, in about lat. 6° 13′ S., lon. 122° 40′ E., bearing nearly South from the South point of Bouton, is an island of middling height, situated on the South side of the channel; and Greenwood Island lies to the eastward, nearer the southern Token Besseys.

Geo. site of Bouton South point, with sailing directions. BOUTON SOUTH POINT, is in lat. 5° 42′ S., lon. 122° 44′ E., or 2° 16′ East from Middle Island in Salayer Straits by chronometer. Captain Heywood, in 1803, and Captain Clarke, of the True Briton, in 1796, made it exactly in the same longitude by chronometers. This point, bears nearly East from Middle Island in Salayer Straits, distant 45 leagues; and a course steered E. ½ S., will lead a ship in the fair track to the southward of Cambyna and South Island, at a moderate distance from both, if there is no oblique current. There are no soundings in this track, all the islands being steep to.

Bouton Strait. BOUTON STRAIT, formed betwixt the West coast of that island, and the opposite Island Pangasani, is now seldom used; the passage round the East side of Bouton being *considered* safer, and generally more expeditious. The passage through the strait, is how-

* This place has been at times, visited by 1 or 2 ships from Bengal, with opium and piece-goods, in expectation of receiving gold dust, &c. in return for those articles; but these ships were generally disappointed, in their prospects of a lucrative trade.

ever, safe, and was formerly much frequented by Europe ships; although it is only ¾ or 1 mile wide in the narrowest part, the Cornwallis and some other ships that have gone through it lately, found no less than 10 or 12 fathoms water.

The South entrance, is formed betwixt North Island and the South end of Pangasani; here, no soundings are obtained, and a reef extends a considerable way from North Island. The coast of Bouton is cultivated, and well inhabited; supplies of poultry, fruits, and other refreshments, may be procured at the town of Bouton situated in lat. 5° 27′ S., lon. 122° 48′ E., a little inside of the South entrance of the strait, upon the shore of Bouton. The Lord North, in August, 1782, moored in 9 fathoms sand, with the stream anchor to the northward in 17 fathoms, and had the flagstaff bearing S. 17° W., the watering place E. N. E. 3 miles, and the wooding place on Pangasini N. N. W., off shore about ½ a mile. Some Dutchmen generally reside here, but it is prudent to be prepared against any treachery, for the inhabitants of these islands ought not to be trusted.

with sailing directions.

Geo. site of the town of Bouton.

The tides are moderate, which will assist a ship in drifting through the strait in light winds, with boats a-head, to keep her in the fair track, which is generally about mid-strait, or rather nearest to the Bouton shore, in some places. Although in a few parts, the water is very deep, convenient anchorage may often be got, in moderate depths of ouze or mud; and in some places, the bottom is sand and coral. A shoal projects a little way from the N. W. end of Bouton, which must have a birth in passing; and when clear of it, the channel leading out of the North entrance of the strait, takes an easterly direction betwixt the North end of Bouton and the Island Weywongy. Approaching this entrance from the northward, it is not perceived until near; and a remarkable rock, hollow below, with bushes on its summit, lies at the entrance, on the Bouton side, being connected with that shore at low water. The fishing stakes contiguous to the shore on either side of the strait, ought to be avoided, as they are placed in shoal water. The shores at the North part, rise on both sides, perpendicularly from the sea.

There is another channel to the westward of Pangasani, betwixt it and the coast of Celebes; but having a number of small isles in it, with several shoals, it is thereby rendered intricate, and never attempted by large vessels.

THE PASSAGE outside of BOUTON, is now in general use; and to proceed by it, you should approach the S. E. point of Bouton within a few miles, if the wind is westerly, and keep the coast aboard to the East point, to prevent being set over toward the southern Token Besseys Islands, by southerly currents and light airs, which frequently prevail in the offing. Captain Seton, in the Helen, was delayed by faint airs, and southerly currents, on the East side of Bouton, from the 23d of February to the 6th of March, 1795. Although he sounded often in different parts, within 1 and 2 miles of the shore, no ground was got with 100 and 120 fathoms of line. Other navigators have found the eastern coast of Bouton, equally steep; yet it has been reported, that there is a shoal off the eastern shore of Bouton, in about lat. 5° 30′ S., but it *probably* has no existence.

Instructions for the passage outside of Bouton.

The Island of Bouton is generally high, or of middling height, hilly at the South part, with numerous huts interspersed from the rocks near the sea, quite up to the summits of the hills.

BOUTON EAST POINT, in lat. 5° 15′ S., lon. 123° 15′ E., or 2° 47′ East from Middle Island in Salayer Straits, by chronometer, is a long, low, level point, projecting into the sea, having behind it up the country, a piece of remarkable table land. The coast between it and the South end of Bouton, forms a considerable concavity or bight, and a reef projects from the S. W. point of this bight, with foul ground stretching farther to the S. W. along the shore. To the northward of the East point, an extensive and deep bay, about 8 or 9 leagues wide, called Dwaal or Deval Bay by the Dutch, is formed betwixt it and the N. E. part of

Geo. site of the East point of Bouton.

the island. The North point of this bay, bears nearly N. by W. from Bouton East point, and a direct course may be steered from point to point, without hauling far into the bay.

Calansoesoe Harbour.

CALANSOESOE HARBOUR, or SON BAY, is situated at the northern extremity of the great bay to the westward of the North point, and the shoals that project from it. This is a kind of road or harbour, with soundings of 30 to 55 fathoms at the entrance, and to the westward near the shore. The Dutch ship Hope, bound to the Spice Islands, being late in the season, of 1791, took shelter in this place, where she lay during the S. E. monsoon, and constructed a plan of it. From this plan, it appears, that care is required in entering between the shoals on the East side, and those fronting the isles that bound the western side of the road, which seems to be sheltered from the sea, by shoals projecting from the point on the East side. Rice, poultry, and other articles of refreshment, may be procured at the village on the N. E. side of the bay.

This bay was visited by Captain Tarbutt, in the Company's ship Apollo, on the 28th of March, 1813, where she anchored in 27 fathoms, with the South point of the bay bearing S. ½ E., North point of the Inner Bay S. E., South point of ditto S. W. by S., and made the lat. 4° 55′ S., lon. 123° 11′ E. by chronometers. A guide was procured from the Rajah, who carried the launch and cutter to a fresh water river, as the well near the village was emptied by filling only 3 casks.

Geo. site.

This bay appeared unsafe, having overfalls from 80 to 30, 15, and 5 fathoms; and not more than 2 or 1½ fathoms, upon some banks of coral.

The land contiguous to the sea, is level from the eastern point of this bay, to a considerable distance northward, and may be coasted within a moderate distance to the N. E. end of Bouton, situated in lat. 4° 23′ S., lon. 123° 4′ E. A little inland from the N. E. point of Bouton, there is a small peaked hill like a sugar loaf.

Geo. site of the N. E. end of Bouton.

Weywongy, and Geo. site of Waxway.

WEYWONGY, bounding the North side of the North entrance of Bouton Strait, is a high island of considerable size, the body of it situated in about lat. 4° 3′ S. WAXWAY, fronting the coast of Celebes farther to the northward, is also a considerable island, high in the centre, with a declivity toward the sea. The centre of this island is in lat. 3° 34′ S., lon. 123° 14′ E. Close to the Celebes coast, from the entrance of Bouton Strait to a great way northward, there are soundings in many places, where a ship might anchor in case of necessity, but several shoals are interspersed along this part of the coast.

Token Besseys.

TOKEN BESSEYS, or TOUCAMBASO, consisting of a large group of moderately elevated islands, extend nearly N. N. W. and S. S. E., and their western sides form the eastern boundary of the channel, on the outside of Bouton. The N. Westernmost of these islands, called Wangiwangi, may be seen about 7 or 8 leagues from the deck, and appears to be the largest of them. I made the body of it in lat. 5° 15½′ S., lon. 123° 33′ E. by chronometers, corresponding with several other English navigators;* and the nearest part of it, bears directly East from the East point of Bouton about 6 or 6½ leagues distant, this being the breadth of the channel between them. These islands have been considered dangerous to approach all round, which is not the case, for the northernmost island may be approached within 2 or 3 miles on the North and West sides, there being no soundings at this distance, nor any appearance of danger above a mile from the shore. It is inhabited, abounds with cocoanuts, and the rocks or shoal water, projects only about a mile off shore; the westernmost island, appears also safe to approach on the West side; but there is a large shoal, dry in some places, near the S. Western island. The Orpheus frigate, grounded on the East side of the N. E. island, in May, 1796, not far off shore; but it is only in a S. E., S. W., or,

Geo. site of the northernmost.

* The Dutch frigate, Maria Reygersbergen, in 1805, made it in lat. 5° 17′ S., lon. 123° 33′ E., by chronometers.

southerly direction from these islands, that shoals are known to exist, for they are not so dangerous, as generally supposed. Most of them are inhabited, but they are destitute of anchorage, the islands and reefs being steep to.

Between some of the Token Besseys Islands, there are channels, through which ships have been known to pass with safety in day light; but it seems not prudent to run for any of them, except in a case of necessity. The Supply Brig, Lieut. Ball, from Port Jackson, bound to Batavia, in June, 1790, passed about 2 leagues to the northward of St. Matthew's Islands, and soon after saw the Token Besseys to the S. W.: when near the latter, she steered W. S. W. betwixt the northern islands and others, and passed a sand bank at noon, having some bushes on its North end, and a spit stretching 3 or 4 miles to the southward, with high breakers on it. The islands were cultivated, and a proa came off loaded with cocoanuts at 4 P. M.; soon after, a shoal was seen extending from W. N. W. as far as the eye could reach, in a S. Easterly direction, distant about 6 miles; she therefore hauled to the wind, and lay under the nearest island, (called Combado by the natives) during the night. At day light she made sail, steered W. N. W., and ran along the eastern side of the shoal, keeping about 4 miles off. It was found to be very extensive, bounded on the eastern side by rugged rocks, and there are no breakers on it when the sea is smooth. This shoal seems to front the S. W. part of the Token Besseys Islands, and the North end of it was rounded at 4 P. M. about 2 miles distance; from thence, the Supply steered for the South end of Bouton, which she passed early on the following morning.*

Exclusive of the large group of Token Besseys, mentioned above, other detached islands which go by the same general name, extend to about lat. 6° 14′ S., with safe channels betwixt several of them; but on account of some shoals adjacent, they are seldom approached close by ships. The southernmost of these islands, called Pinnunko by the natives, and in the Dutch charts Pirocka, is of considerable size, and moderately elevated, having a large bay on the S. W. side; but its shores are steep, without anchorage. The South end of this island is situated in about lat. 6° 14′ S. and in lon. 124° 1′ E., by observations taken in the Boddam and Taunton Castle, when passing to the southward: about 8 or 9 leagues to the eastward of it, they rounded another island, supposed Velthoens, making it in lat. 6° 10′ S. lon. 124° 25′ E.; but this island seems to be situated more easterly, by the descriptions which follow.

Geo. site of the southernmost.

VELTHOEN'S ISLAND, the S. Easternmost of the Token Bessey's Chain, is in lat. 5° 58′ S. lon. 124° 48′ E. or 3° 27′ West of Amboina, by Captain Heywood's chronometers, who passed near the East side of it on the 26th of February, 1803, in H. M. S. Dedaigneuse. He describes it to be low, covered with trees, about 5 miles in extent, without any appearance of danger on that side. Captain Gardner, in the Castlereagh, bound from Bombay to China, after steering along the North coast of Flores, saw Veltheon's Island at day break, on the 1st. of January, 1809. It appeared to extend from about lat. 6° 0′ to 6° 8. S., and he made the eastern part in lon. 124° 42′ E.† When it bore from W. by N. to W. by S. ½ S., 8 or 9 miles distant, the side fronting the sea had a white chalky aspect, which seen in contrast with the bushes or trees that cover this low island, might have been mistaken for breakers at a greater distance: at this time, distant land was seen to the westward, probably the Island Pirocka. On the North and East sides, Velthoen's Island ap-

Geo. site of Velthoen's Island.

* Captain Bristow, commanding a southern whaler, passed also to the westward among the Token Bessey's Islands, having fallen to leeward when blowing strong. Captain William Greig, in the Minto, passed from the southward through the group of Token Besseys, leaving several of its low islands on both sides.

† The Addington, passed on the East side of Velthoen's Island, on the 24th of December, 1796, and made the East end of it in lat. 6° 9′ S., lon. 124° 40′ E., having come through the Ombay Passage, betwixt the East end of that island and Wetter, in her route toward the Pitt's Passage. Velthoen's Island, is called sometimes Cocoa, or Koko Island.

peared bold to approach, and free from danger; but a reef projects a great way from it to the S. Westward. After rounding this island, the Castlereagh, weathered the West end of Bouro so far as scarcely to see it.

Captain Williams, in the Thames, on the 5th of January, 1797, made Velthoen's Island in lat. 6° 8′ S., lon. 125° 48′ E. by chronometer; and returning from China in the same year, on the 20th of August, he made it in lat. 6° 8′ S., lon. 124° 30′ E. by chronometer. The true longitude of this island, therefore, seems to be between 124° 42′ and 124° 48′ E.

Geo. site of St. Matthew's Islands.

ST. MATTHEW'S ISLANDS, in lat. 5° 18′ S. (the body) lon. 124° 16′ E., are 2 in number, rather higher than Velthoen's Island, and they extend in a N. W. and S. E. direction about 4 or 5 leagues. The southernmost is largest, separated from the other by a space about 4 miles, a reef of breakers uniting them, and stretching out about a league to seaward. They are about 15 or 16 leagues to the eastward of the northern Token Besseys, betwixt which and St. Matthew's Islands, and also betwixt the latter and Veltheon's, the passage is thought to be safe, with the assistance of a good look out in the day time.

The Apollo, on the 2d. of April, 1813, during a light breeze, and not having steerage way, was drifted by the current toward the northern St. Matthew's Island, and carried within a ¼ mile of the reef that projects from its N. W. point, at the rate of 4 miles an hour; when this point bore W. N. W. the current set to the S. E., and after passing through a strong eddy and a rippling, it changed and set again to the eastward. At noon, when St. Matthew's Islands S. E. point bore S. by W., and the N. W. point W. ½ S., observed lat. 5° 17′ S. lon. 124° 16′ E′ by chronometer. Observations taken in the Dutch frigate Maria Reygersbergen in 1806, make the East extreme of St. Matthew's Islands in lat. 5° 20′ S., lon. 124° 18½′ E., and their western extreme in lat. 5° 18′ S. lon. 124° 12½′ E. by chronometers. Variation 0° 30′ E. in 1813.

To approach the northern Token Besseys, when coming from the eastward.

Ships bound to the westward, in the S. E. monsoon, should steer for the northernmost island of Token Besseys, and round it within 3 or 4 miles; for some ships by steering wide of these islands, have been unable to weather, or beat round the South end of Bouton, against the northerly currents which at times prevail, and were obliged to proceed through Bouton Strait.

To sail from Bouton toward Xulla Bessey.

WHEN BOUND through the Pitt's Passage in the N. W. monsoon, after reaching the N. E. end of Bouton, steer northward to approach the island Weywongy, if N. W. winds blow strong, then stretch off for the South end of Xulla Bessey. This seems necessary in ships which sail indifferently, during the month of December, and in the early part of January, because N. N. W. or N. W. winds, and southerly currents, prevail at times. The winds and currents, in the Pitt's Passage, are, however, frequently variable, by which a ship may proceed almost in any direction; but in passing through, it is prudent to preserve the windward side of the channel, if northerly winds predominate. Do not lose time working round the N. W. end of Bouro, if you happen to fall to leeward with northerly winds; but in such case, pass along the South coast of Bouro, and proceed round the East end of that island, into the Pitt's Passage. During the whole of the N. W. monsoon, ships from Amboina are enabled to proceed to the northward, by keeping close in with the East end of Bouro, where they get variable breezes and land squalls. Here, they seldom experience much current, and sometimes a drain in their favor; but close over to Manipa, and betwixt it and Ceram, the current frequently sets strong to S. Eastward in this season.

Ships may occasionally pass round the South and East coasts of Bouro.

Geo. site of Xulla Bessey.

XULLA BESSEY, the southernmost of the Xulla Islands, is of considerable height, may be seen 12 or 13 leagues, and has a level aspect when viewed far off. Its S. E. point is in about lat. 2° 28′ S., and I made it in lon. 125° 58′ E. by chronometer, which is exactly the mean of 6 ships chronometers, nearly agreeing with each other. From thence, it extends

nearly 11 leagues about N. by W. ½ W., the N. E. point being in lat. 1° 58′ S., the N. W. point nearly on the same parallel, and in lon. 125° 48′ E. This island is cultivated and well inhabited, abounding with wax and honey, and seems to be the only 1 of these islands, where a ship may procure refreshments; there is a village adjacent to the S. E. point, where the Dutch have a fort. The northern part of the island, is surrounded by a coral reef, at the distance of 2 or 3 miles, leaving a channel about 3 or 4 miles wide betwixt it and Xulla Mangola, with anchorage from 30 to 35 fathoms near the shore of the latter, which is bold to approach. This channel extends nearly East and West, with currents running through it about 3 and 4 miles an hour, which shift at times, and form a kind of tides. A ship coming from the eastward, and intending to pass through, should keep the Mangola Shore aboard, until near the small island situated to the westward of the passage, then she may haul to the southward. Channel to the northward of it.

XULLA ISLANDS, are 4 in number, of considerable magnitude, of which Xulla Bessey has been described above; the other 3 form a chain, extending East and West about 36 leagues, and are high bold islands, thinly inhabited.* It has been observed, in the directions for the Returning Passage from China on the West sides of the Philippine Islands, at the article Molucca Passage, that there seems to be no safe passage betwixt the westernmost island Xulla Talyabo, and the middle, 1 Xulla Mangola. Xulla Islands.

GREYHOUND'S STRAITS, through which Captain Elphinstone passed in the frigate of this name, fronts the West end of the westernmost Xulla Island, extending from lat. 1° 40′ to 1° 56′ S., lon. 124° 30′ E. The West end of Xulla Talyabo, stretches nearly North and South, having in lat. 1° 58′ S. a Haycock Island close to its S. W. point, from which Skelton's Island bears North 13 miles, and lies close to the N. W. part of Xulla Talyabo, with several isles stretching from it near the Xulla shore to the N. E. and eastward along the North coast of the latter, fronted by a large and dangerous shoal in lat. 1° 34′ S. Greyhound's Straits. Geo. site.

Middle Island, distant about 2½ or 3 leagues West from Skelton's Island, is low, swampy, covered with trees, surrounded by shoal water to the distance of ¾ of a mile, and betwixt these is the eastern channel through Greyhound's Straits. The western channel is formed to the westward of Middle Island, bounded to the West and S. Westward by Albion's Island, distant about 3 or 3½ leagues from the former, having other islands to the West and southward of it.

The Albion, Captain Skelton, passed through these straits to the northward, on the 22d of November, 1812, having previously experienced a strong current running to the westward between Timor and Ombay, in October and November; she went through the Strait of Flores, then to the eastward of Token Besseys, and afterward through the eastern channel of Greyhound's Straits, and found it a safe, and clear passage, leading to the Pacific Ocean.

In returning from the N. Eastward, she passed through the western channel in November, 1813, and on the 20th anchored in 19 fathoms coarse sand, about 1½ mile off the S. W. side of Middle Island, and cut a supply of firewood there. When Middle Island bore S. E. by E. 9 miles, and Albion's Island S. by W. 6 miles, she had 100 fathoms water; from thence steering S. E. for the former island, the depth decreased regularly till she anchored near it in 19 fathoms. From hence, she steered S. E. by S. toward the Haycock, in soundings of 12 to 20 fathoms to the distance of 7 miles from Middle Island, then deepened to 50 fathoms in a run of 4 miles farther; at noon observed lat. 1° 58′ S. the Haycock bearing East 5 miles, no bottom. In November, land and sea breezes were expe-

* Xulla Mangola, the middle 1, is high in most places, particularly at the N. W. part, the land is high and rugged; Xulla Talyabo, is also a high island.

rienced here, with regular tides running North and South about 3, or 3¼ miles per hour: all the islands, except the Haycock, are mostly low and woody.

The same ship, passed to the southward through the eastern channel, with a strong breeze and pleasant weather, on the 4th of February, 1814; and she carried soundings of 20 to 35 fathoms between Middle Island and Skelton's Island, keeping about 2 miles from the latter, in the eastern side of the channel, deepening as she approached the Haycock.

From the Haycock, Middle Island bears N. W. by N. distant 15 miles, and Albion's Island bears from it W. N. W. ½ N. about 18 miles. The Haycock and Skelton's Islands, which form the eastern limits of these straits, lie on the same meridian, in lon. 124° 36′ E. by the Albion's journal.

Geo. site of Lissamatula.

LISSAMATULA, the easternmost and smallest of these islands, is separated from the East end of Xulla Mangola by a narrow gut; it is moderately high and level, having along its North and East sides, several white cliffs, which are conspicuous at a considerable distance. The S. E. point of this island is in lat. 1° 46′ S. lon. 126° 32′ E., or 1° 43′ West from Amboina by chronometer; and off this point lies an islet, which forms like a saddle in coming from the northward.

Geo. site of the North coast of Bouro;

BOURO, is all high land, and the semicircular mountain on the N. W. part resembling a dome, may be seen 25 or 30 leagues off, in clear weather. The N. W. end of this island is in lat. 3° 6′ S. lon. 125° 57′ E., or 5° 28′ E. from Middle Island in Salayer Straits, by our chronometers in the Anna, corresponding with the mean of 7 other ships' chronometers; and it bears S. 2° W. from the S. E. point of Xulla Bessey, distant about 13 leagues.

The North coast of Bouro, is bold and safe to approach, there being no soundings except very near the shore at the N. W. part, where a spit is *said* to project a little way: the northern extremity of the island is in lat. 3° 2′ S.; and the N. E. point, which forms the North side of the entrance of Cajeli Bay, is in lat. 3° 15′ S., lon. 127° 5′ E., by mean of 6 ships' chronometers.

Geo. site of Gomona.

GOMONA, in lat. 1° 56′ S. lon. 127° 38′ E., or 37 miles West of Amboina flagstaff by chronometer, bearing from the S. E. point of Xulla Bessey E. 18° N. distant 35 leagues, is a small island of middling height, sloping from the centre toward each end, and situated near the South coast of Oby Major; which, together, bound the North side of the Pitt's Passage in this part, as the coast of Ceram does to the southward. The coasts of Oby Major and Ceram, are mostly high, and safe to approach; but the S. E. end of the former is low land. All through the Pitt's Passage, the land being generally high, may be seen on each side, when the weather is clear.

Oby Major and Ceram.

To sail through the Pitt's Passage.

HAVING entered the PITT'S PASSAGE, betwixt the South point of Xulla Bessey Bouro, steer E. by N. ½ N. to E. N. E., which will carry you directly through it, to the entrance of Pitt's Strait, if there is no lateral current; observing, not to borrow toward the islands on the northern side, if the wind incline from that direction, with a southerly current prevailing.

Remarks relative to the route to be pursued from thence, into the Pacific Ocean.

When the East end of Oby Major is approached, continue to steer to the eastward, if the route by Dampier's Strait is to be chosen for entering into the Pacific Ocean; but some persons prefer the Gillolo Passage, for the following reasons: because the Gillolo Passage is spacious, the islands on each side bold to approach, clear of hidden danger, with good room for working by night or by day, and the tides or currents in it are seldom strong: besides, ships which go out by this passage, run no risk of getting on the Buccleugh's Shoal, or being embarrassed with the coast of New Guinea. Other navigators prefer the passage through Dampier's Strait, because they sometimes get variable and favorable breezes, to run

them speedily clear of Point Pigot; whilst ships proceeding through the Gillolo Passage, are liable to be retarded in beating out against the northerly or N. E. winds, and a heavy swell that generally rolls in from the ocean. Besides, although the tides in Dampier's Strait are very strong, and several dangers in it, steep to, there are anchorage in the narrow part; and if ships round Point Pigot pretty close, they will run little risk of getting embarrassed with the coast of New Guinea.

The Gillolo Passage seems preferable *very* early in the season, but in January and February, when the N. E. winds approach the equator, the route through Dampier's Strait, should probably be followed by ships which sail indifferently. In March, the Gillolo Passage may be adopted, for the N. E. winds then begin to abate.

The Castlereagh, left Bombay in November, 1808, went through Allass Strait, along the North coast of Flores, round the West end of Bouro, then through the Pitt's Passage and Dampier's Strait, and was only 70 days from Bombay to China. From Dampier's Strait, she carried strong westerly winds to the Pellew Islands, whilst other ships which went out by the Gillolo Passage about the same time, experienced light baffling winds, and were nearly 5 weeks getting what the Castlereagh did in a few days; which seems to show, that the latter passage is sometimes precarious.

## 3d. GILLOLO PASSAGE: ISLANDS AND HARBOURS ADJACENT, WITH SAILING DIRECTIONS.

General description of the Gillolo Passage.

GILLOLO PASSAGE, formed betwixt the islands Gillolo and Waygeeooe, is separated into 2 branches, by the Island Geby stretching across nearly in the centre. The channel between it and Gillolo, is *generally* known by the name of Gillolo Passage. That to the eastward of Geby, betwixt it and Waygeeooe, is *sometimes* called Bougainville's Passage, this circumnavigator having sailed through it in 1772; but the Duke and Dutchess Privateers, had previously gone through it in 1710. Of late years, several English ships have passed between Geby and Waygeeooe; but the small islands, with some rocky islets above water, which are interspersed over this channel, make the western, or Gillolo Passage, preferable.

The channels between the islands, leading from the Pitt's Passage into the Gillolo Passage, are all thought to be safe. That betwixt Pulo Gasses and Kekik being wide, is generally preferred in the N. W. monsoon; for the other wide channel betwixt Pulo Pisang and the Boo Islands, is *then* too far to leeward, but it may be adopted by ships coming from the northward during the S. E. monsoon.

Geo. site of Lookisong.

LOOKISONG, or LANDSCAPE ISLAND, named so by the Malays from its pleasant aspect, extends nearly N. N. E. and S. S. W. about 3 or 4 leagues, fronting the East end of Oby Major; and it is sometimes called Great Pulo Gasses. It is of moderate height, well wooded, stretching with a remarkable even slope to the low point that forms its northern extremity: the South end is in about lat. 1° 46′ S., lon. 128° 10′ N. The channel betwixt this island and Oby Major, being more contracted than usually represented, and subject to calms or baffling winds from the adjoining high land, is not frequented, consequently little known.

Geo. site of Pulo Gasses.

PULO GASSES, distant about 2 or 3 leagues to the E. N. Eastward of Lookisong, and nearly of the same height, is a flat table land about $\frac{3}{4}$ of its extent, sloping down at each end, with a spit of rocks stretching from the S. E. end about a cable's length. The South point is in lat. 1° 41′ S., lon. 128° 20′ E., or 5 miles East of Amboina by chronometers:

the island has a sandy beach, but no soundings are got at 1 or 2 miles distance, and 40 fathoms was found at the South end, about a ship's length from the shore. The channel betwixt this island and Lookisong, called by some persons, GASSES STRAIT, is safe, and may be adopted with a westerly wind; but the channel to the eastward of Pulo Gasses being wider, is preferable with a working wind. A ship proceeding through Gasses Strait, will discern a small isle off the North end of Lookisong; and the high land of Gillolo, with the group of islands stretching from its South point, will be perceived when she is at the North end of the strait.

Its adjoining strait.

Geo. site of Kekik; islands near it.

KEKIK, in lat. 1° 33′ S., lon. 128° 37½′ E. bearing E. N. E. ¼ N. 6½ leagues distance from Pulo Gasses, is a small high island. LAWN, in lat. 1° 34′ S., distant about 2 leagues eastward of Kekik, is also a high island, with an islet off each side of it, and another in the form of a button, betwixt it and Kekik.

Geo. site of Pulo Pisang.

PULO PISANG, the highest of these small islands, forms in a double hill, like each other, and may be seen 11 or 12 leagues: it is situated in about lat. 1° 23′ S., lon. 128° 53′ E., or 2° 25′ West from Point Pigot, measured by our chronometers, and Captain Heywood made it 37 miles East of Amboina by chronometer.

Geo. site of the Boo Islands.

BOO ISLANDS, in lat. 1° 12′ S., lon. 129° 18′ E., distant about 9 or 10 leagues to the E. N. E. of Pulo Pisang, consists of a group of small low islands, more than 10 or 12 in number; and they bear West from the West end of Pulo Popa, distant 5 or 5½ leagues, which is the width of a safe channel formed between them, leading to Dampier's Strait, also into the Gillolo Passage. The islands are inhabited, and produce cocoanuts; dried fish and a few goats may also be procured, according to Captain Forrest's description, who touched here in 1775; he anchored in 15 fathoms, close to a small sandy island, having upon it some cocoanut trees.

To enter into the Gillolo Passage by the channel mostly used, betwixt Pulo Gasses and Kekik, haul close round the South end of Pulo Gasses, to prevent being carried past the channel by the current, which frequently sets to the eastward. After rounding Pulo Gasses, the highest of the group of islands that lie off the South end of Gillolo, will begin to appear from the deck in the form of a saddle, the southernmost of which, in about lat. 1° 14′ S., bears nearly North from the North end of Lookisong, distant 7 or 8 leagues. The largest of them is generally called Pulo Dammer, and the northernmost, called Pulo Rou, fronts the South point of Gillolo, at 4 or 5 miles distance.

Directions for entering the Gillolo Passage.

Weeda Islands.

WEEDA ISLANDS, are very low, covered with wood, and form a compact group 14 or 15 in number, the southernmost of them bearing North a little westerly from Kekik, and lie in lat. 0° 40′ S. The centre of the group bears E. by N. ¼ N. from the South point of Gillolo, distant about 6 leagues, and they seem safe to approach, there being no ground with 100 fathoms line, within 2 miles of them on the East side.

Gillolo South Point.

GILLOLO SOUTH POINT, called COCOANUT POINT, is in lat. 0° 45′ S.; the land near it is rather low and uneven, and the coast between it and Point Tabo, forming a deep semicircular bay, is not seen in steering a direct course for the latter.

Point Tabo.

TABO, or PATANY POINT, the eastern extremity of Gillolo has a gradual slope, ending in a bluff to seaward; and when bearing N. W. by N., some white cliffs are seen near it. The land hereabout is high, and over the point, stands a hill like a quoin, with its thick end to the westward. PULO MOAR, is low, flat, and woody, stretching out from Point Tabo, and connected with it by rocks and breakers; close to the East end of Pulo

Pulo Moar,

Moar there is a small islet, in lat. 0° 9′ N., lon. 128° 58′ E. by chronometers, which forms the western boundary of the passage between it and Geby. Geo. site of the islet near it.

SHANPEE ISLANDS, (called by some Weeda Islands) bearing nearly North from Point Tabo, consists of a group 3 or 4 in number, extending 3 or 4 leagues North and South, the body of them in about lat. 0° 30′ N. They are mostly level, of considerable size, with a small elevation between the central part and the northernmost island. Shanpee Islands.

CATHERINE'S ISLANDS, in lat. 0° 39′ N., lon. 129° 11′ E. by chronometers, bearing N. N. E. ½ E. from Pulo Moar distant 11 leagues, are 3 small low islands close together, forming the western boundary of the North entrance of the Gillolo Passage. They are distant 6 or 6½ leagues to the E. N. E. of the Shanpee Islands, and have no soundings within a mile of them.* There is a Rocky Islet to the N. Westward of these islands, situated in lat. 0° 45′ N., lon. 129° 8′ E. seen in January, 1808, by the Ardassier. Geo. site of Catherine's Islands. Geo. site of Rocky Islets

THE EASTERN COAST of GILLOLO, is well inhabited in many places, with small villages fronting the sea adjacent to Point Tabo, and at other parts of the coast. Between the extensive peninsula that forms point Tabo, and the other peninsula that stretches N. Eastward, and forms the N. E. extremity of Gillolo, the Great Bay of Ossa is situated; having in it several islands and shoals, with moderate depths and regular soundings, amongst, and inside of them. Eastern coast of Gillolo,

OSSA VILLAGE, in lat. 0° 45′ N., lon. 128° 22′ E. by chronometer, situated on the South side of the bay, abounds with nutmegs, and has a fine watering place; here, ships may procure water and refreshments, and plenty of timber for spars on Pulo Orr, an island about 3 miles to the N. N. E. of the village. The anchorage in the road is in 12 to 14 fathoms good holding ground, betwixt the island and the village of Ossa. About 2 leagues nearly East from Pulo Orr, lies Pulo Otto, on either side of which, there is a channel from 2 to 3 miles wide, leading from the road to the eastward: the depths are from 20 to 30 fathoms betwixt Pulo Otto and some shoals to the N. Westward, which bound the channel on that side; and from 17 to 20 fathoms in the South channel, betwixt it and Pulo England. This is a considerable island, uninhabited, and separated from Gillolo by a narrow passage, having good anchorage in it of 8 or 9 fathoms, and abounding with fish. These islands have reefs projecting from them, and there are several other islands and shoals, 2 or 3 leagues North and N. Westward from Pulo Orr; 1 of them a sandy isle 8 or 9 feet above water, is about 3 or 4 miles N. by W. from it. About 2 miles West from Ossa Village, lies Ayer Watchey River and Village, where fresh water may be got about a mile up the river. Golonasy Village, situated about 4 miles to the N. W. of the latter, was destroyed by the Dutch on the 25th of January, 1808. Geo. site of Ossa Islands and coast adjacent.

MABA VILLAGE, in about lat. 0° 53′ N., distant 6 leagues to the W. N. Westward of Ossa, is situated near the bottom of the bay, where there is a river navigable by boats, and good fresh water. Maba Island, situated near the shore to the northward of the river, has a few houses on it, and anchorage about 1½ or 2 miles to the eastward, in 10 to 12 fathoms water. Betwixt this place and Ossa, and from thence to Pulo Otto, the soundings extend along the coast pretty regular, to the distance of 5 or 6 miles off shore; but a good Maba Village and adjacent coast.

* Captain Pope, in the Minerva, got close to these islands at midnight, on the 29th of January, 1808, and named them Catherine's Islands. Captain Tate, in the Cumbrian, got also close to them in the night of the 26th of August, 1809, returning from China, and thought them a new discovery; but although they are not placed in modern charts, an island without a name affixed to it, is laid down in this situation in an old Dutch chart in my possession.

look out is requisite, to avoid the shoals contiguous to the coast, and others that lie interspersed in the offing.

A ship proceeding to any of these places, for water or refreshments, ought to keep a boat sounding a-head. Captain William Greig, recently visited Ossa, and the adjacent parts, in the Minto, from Bengal, and constructed a plan of the South side of the bay, from whose statement this description is taken.

Geo. site of Geby; GEBY, extending about 6 or 7 leagues in length, nearly N. W. and S. E., is narrow, resembling several islands when viewed from the westward at 7 leagues distance; the northern part is rather low, but the South end is high, and terminates in a bluff point. The N. W. end of this island is in lat. 0° 4′ N., lon. 129° 19′ E., by mean of several ships chronometers, nearly agreeing, but the True Briton's and Lieutenant M'Cluer's observations, place that end of the island exactly on the equator; it bears from Pulo Moar nearly E. by S. ½ S., distant 7 leagues, this being the narrowest part of the Gillolo Passage, about 6 or 6½ leagues wide.

Fow Island, and the Harbour. FOW, or FAUX ISLAND, in about lat. 0° 6′ S., has a peaked hill on its South part, and is separated from the western shore of Geby by a narrow channel, about ¼ mile wide, which forms a safe harbour, with depths from 10 to 15 fathoms. There is a passage into it, on either side of Fow Island, by keeping close to this island; for a shoal lies nearly midway betwixt it and the Geby shore, in the West entrance, with good depths round it. And in the South entrance, there are 2 small shoals, close to each other, with 7 fathoms water between them, 7 or 8 fathoms inside, and from 20 to 10 fathoms betwixt them and the East side of Fow Island, which is the widest and best channel.

Anchoring Bay and Village. In the small bay to the eastward of these shoals, there is anchorage in 15 to 20 fathoms near the shore of Geby; Ketchepee, the principal village, being about 2 miles distant, on the East side of the island, with other villages near it to the southward. Soundings are not obtained until well in with the shore.

Bason. On the North-East side of Fow Island, a narrow gut fronting Geby Harbour, stretches into the island close to the peaked hill, and forms an excellent port or bason; there being 4 and 5 fathoms water in the narrow entrance, and from 10 to 16 fathoms inside. The fresh

Refreshments. water rivulet, is upon the Geby shore, opposite to the North point of Fow Island; and the rise and fall of tide, is 5 feet on the springs. The island abounds with turtle and fish of various kinds; the natives were hospitable to Lieutenant M'Cluer, who touched here in 1794, and procured 1000 nutmeg plants; they prefer white cloth to other articles, and speak

Isles adjacent. the Malay and Tidore languages. Monsieur Bougainville, in 1772, also stopped at this place for refreshments, and surveyed the port. The N. E. side of Geby is steep to, without anchorage; and the Isles Jyoi and Outah, about a league to the northward of the East point, are small and low.

Gagy, and other islands. GAGY, in about lat. 0° 25′ S. bearing nearly S. E. by E. from the S. E. end of Geby 6 or 7 leagues, is an island of considerable extent, and moderately elevated, formed of uneven hummocks; having some small islets to the southward of it called Doif, and a large group called Batangpally Islands, to the eastward, fronting the S. W. end of Waygeeooe. Between these and Gagy, there is a passage, and the channel betwixt Gagy and Geby is very safe, having an islet in it near the South end of the latter. This channel is sometimes adopted by ships proceeding outward; and it may probably be chosen to advantage, by ships coming in toward the Pitt's Passage during the S. E. monsoon, being more to windward than the channel betwixt the West end of Geby and Gillolo.

Geo. site of Syang, SYANG, in lat. 0° 22′ N., lon. 129° 55′ E. by chronometer, bearing from the N. W. end

of Geby about E. N. E. ½ N. distant 13 leagues, is a low flat island about 4 miles in extent, having soundings from 10 to 20 fathoms sand and rocks, within 2 or 3 miles of its western side; farther in, there is 6 or 7 fathoms, with fresh water at a rocky point, near the N. Western extremity of the island.

EYE ISLAND, in lat. 0° 24′ N., lon. 129° 53′ E., adjacent to the North end of Syang, is small and low, covered with trees, with soundings near it. This is the outermost island, bounding the eastern side of the North entrance of the Gillolo Passage, and it bears E. 21° S. distant 15 leagues from Catherine's Islands, which bound it to the westward. Eye.

WYANG, distant about 4 leagues S. Eastward from Syang, is the northernmost of a range of islands, stretching from it to the N. W. end of Waygeeooe; of which, EEN is the farthest to the N. E.; and RUIB the largest, lies farthest to the S. W. toward Gagy, having a rocky islet about a league to the westward. Wyang, and adjacent islands.

Some of these islands are of considererable height, 1 of them has a table land on it, and another of the westernmost of them, is formed of several hummocks. The channels among them are considered safe, but rather contracted between some of the islands: if the wide channel betwixt Geby and Syang, is not adopted by ships passing to the eastward of the former island, they may proceed betwixt Syang and Wyang, which seems to be the widest of the other channels. Channels.

HAVING ENTERED THE GILLOLO PASSAGE, by Gasse's Strait, or by the channel on the East side of Pulo Gasses, steer in the first case about N. N. E., and in the latter about N. by E., to pass through the channel between Point Tabo and Geby. Care must be taken in the night to give a birth to the Weeda Islands, but it is advisable to borrow on the West side of the passage, when the winds are light, because the current sometimes sets to the N. E. or Eastward. Directions for sailing through the Gillolo Passage,

If the wind hang at N. N. W., so as to occasion delay in working to the westward of Geby, pass to leeward, betwixt it and Gagy, then out into the ocean, through any of the channels contiguous to Syang. But the western channel contiguous to Gillolo, and between Catherine's Islands and Syang, ought to be pursued if circumstances admit, in order to weather the Yowl and Asia's Islands. This is rendered necessary, on account of northerly winds generally prevailing when clear of the Gillolo Passage, with a southerly swell, and a current of from 12 to 20 miles daily, setting to the S. Eastward.

If any difficulty is experienced in passing to the westward of the Asia's Islands, the channel betwixt them and the Yowl Islands may be followed, it being about 6½ leagues wide, and very safe; or in case of necessity, pass to the southward of the latter islands, betwixt them and the North coast of Waygeeooe. and from thence, out into the ocean.

When clear of the Gillolo Passage, endeavour to get into lat. 1° 30′ N. to 2° N. as soon as possible, which is considered the best track for getting to the eastward: a constant S. E. or Southerly current may be expected while running to the eastward in these parallels, which requires attention to keep up the northing; but lat. 3° N. should not be exceeded, for farther to the northward, the limit of the N. E. monsoon will be approached, where the N. W. or Northerly breezes, often veer to N. Eastward.

The S. E. current will probably change into an easterly 1, and set to the northward of East, as the latitude is increased: about the parallel of the Pellew Islands, it may be expected to cease; and when the N. E. monsoon begins to blow steady, a westerly current will be experienced. In the early part of the season, it may be prudent to pass to the eastward of the Pellew Islands, but in February and March, it will be sufficient to pass near them to the westward.

Waygeeooe; North coast.

WAYGIOU or WAYGEEOOE, called OUARIDO by the inhabitants, is high uneven land, and the North coast is bold to approach in most places; although some of the points, and small isles near the shore, have reefs projecting from them, and a rocky shoal stretches out a considerable way from the West end of the island. There are 3 harbours on this coast, where fresh water may be got, 2 of which are sheltered from all winds, and seem to be pretty safe, by Captain Forrest's plans of them, although little known to Europeans.

Piapis Harbour.

PIAPIS, the westernmost of these harbours, is situated about 3 leagues eastward from the N. W. point of Waygeeooe. Rocks on which the sea generally breaks, project $\frac{1}{4}$ mile from the West point of the entrance, in a W. N. W. direction, which are avoided by steering in about S. E., and keeping nearest to the West point, off which, stands a Haycock Rock, about 15 feet high, with 10 fathoms mud, close to.

The entrance of this harbour is a large $\frac{1}{4}$ mile wide, having 30 and 20 fathoms water in it, decreasing toward the shores inside, where it separates into 2 branches. A ship may haul round the Haycock Rock, and anchor to the S. W. of it in 15 or 20 fathoms mud, and fresh water may be got at a pool on the island inside, which has a hill on it. There are rocks betwixt this island and the western shore, with a passage of 8 fathoms close to the island, and 5 fathoms close to the shore in a cove at the S. W. side, where a ship might be careened. At the bottom of the eastern branch of the harbour, there is good timber for masts, and a small brook of water, near 2 peaked hills; and there is a pool of fresh water on the small, but high Island Sipsipa, which forms the East point of the harbour's entrance. Nearly mid-way betwixt this place and Offak Harbour, there is a small island called Shoe Island, from its appearance, situated near the shore of Waygeeooe.

Geo. site of Offak Harbour.

OFFAK HARBOUR, situated on the equator, in lon. 130° 50′ E., about 8 leagues eastward of Piapis Harbour, is surrounded by high land, and not easily discerned from the offing. On the East side of the entrance, stands a Sugar Loaf Hill, about 500 feet high, and inland a conical peak, called the Buffalo's Horn, which is in one with the Sugar Loaf bearing S. S. W. The entrance of the harbour, is a large $\frac{1}{4}$ mile wide, with 20 and 30 fathoms water, and the course in about S. by W., keeping some rocky islets, like haycocks, on the left hand, which lie near the East point of the entrance. The harbour inside, stretches a great way to the S. W. and eastward; and 2 islands connected by a reef, front the entrance, the outermost of which, has a pool of fresh water on it, and a reef projects from its western extreme. On the South side of this island, and reef, there is from 12 to 6 fathoms mud, and 20 to 26 fathoms about mid-way betwixt it and the East point of the entrance. A little way round this point inside, there is a small sandy cove with 10 fathoms water in it, and a stream of fresh water running into the sea.

Rawak Harbour.

RAWAK HARBOUR, distant from Offak Harbour about 4 leagues to the eastward, is formed inside of Pulo Rawak, which is separated from the coast by a narrow passage, with 8 and 9 fathoms water in it. The large entrance is from eastward, about $\frac{1}{2}$ a mile wide, with depths of 17 fathoms, decreasing to 10 fathoms inside. Here, a ship may lie sheltered from all winds, but those which blow between East and N. Eastward, and procure water from 2 streams on the Waygeeooe shore opposite, which is inhabited. This harbour, like the others described above, is rather too confined for large ships, unless in a case of necessity; but they seem convenient for vessels of middling size.

Pulo Manouaran.

PULO MANOUARAN, distant about 3 miles from the coast, and 5 miles to the N. W. of Pulo Rawak, is of moderate height, with a pool of fresh water on it, and an islet close to its N. W. point. There are soundings to the East and westward of Manouaran, and a safe

channel inside of it, with irregular depths from 10 to 20 fathoms. About 2 miles West from Pulo Rawak, there is a patch of 6 fathoms; and about 5 miles East of the same island, there is a point of land with a small isle near it on the East side called Boni by the natives, from which isle, a shoal projects 2 or 3 miles to the northward, having 4 fathoms on its extremity.

BONI ROAD, in lat. 0° 0½′ S., lon. 131° 12′ E., distant 5 or 5½ miles to the eastward of Pulo Rawak, is formed by Boni Isle on the East side, and by a point of Waygeeooe to the westward. There is a river here, which boats can go into, and fill their casks with fresh water at all times of tide. The French ships Recherche, and Esperance, in their voyage in search of La Perouse, remained at this anchorage from the 16th to the 28th of August, 1793, to renovate the health of their scorbutic crews. They procured from the natives, turtles brought from the Yowl Islands, hogs, fowls, rice, sago, cocoa-nuts, oranges, sugar-cane, pumpkins, &c. Chinese vessels sometimes touch here, and at other harbours among the Molucca Islands. Geo. site of Boni Road.

From this harbour, the coast trends to the S. E., then round to the South and S. S. W. toward Point Pigot; and about 3 or 4 leagues to the northward of that point, it is fronted by a reef extending out to a considerable distance, which is probably connected with the following shoal. Coast to Point Pigot.

BUCCLEUGH'S SHOAL, seems to have been discovered by the Company's ship, Duke of Buccleugh, on the 24th of August, 1797. At 1½ P. M. saw coral rocks under the bottom, apparently 5 or 6 fathoms under water, up helm immediately, as the water appeared shoaler on the weather bow. When the lead was got ready, the reef or shoal was ½ a cable's length astern, had then 20 fathoms sand and gravel, the extremes of Waygeeooe bearing from N. 52° W. to Point Pigot S. 60° W. and the small island just open with the point, the nearest part of Waygeeooe distant 12 or 13 miles; at this time in lat. 0° 17′ S. from noon observation. Buccleugh's Shoal.

This shoal appeared of 2 or 3 miles extent, as the discoloured water over the rocks shewed from the mast-head; and although squally weather prevented us from sending a boat to sound, have no doubt there is little water on some parts of it.

H. M. ship Hesper, Capt. Campbell, got upon the Buccleugh's Shoal, on the 28th of December, 1815, after passing out of Dampier's Strait. At day light, when 4 or 5 miles to the East of Point Pigot, hauled up N. E., but perceiving breakers at a considerable distance off the East end of the Island Waygeeooe, bore away to the eastward. At 9 A. M. hauled up again to N. E., at 10 observed the water discoloured, and saw rocks under the bottom, and by putting the helm up, cleared the shoalest part of a dangerous rocky bank, in passing over which had 7, 9, 6, 4¾, 5, and 14 fathoms, then no bottom, when the following bearings were immediately taken: the trees on the small island off Point Pigot W. 30° S., just visible with the eye elevated 16 feet above the sea, Point Pigot W. 25½° S., and the supposed easternmost point of Waygeeooe W. 37½° N. The shoal is about 11 or 12 miles distant from the nearest land, or East end of Waygeeooe, and although so far off, is probably connected by detached patches, with the breakers seen in the morning, and it may be the outermost of them. The rocks on the shoalest part of it, did not appear to be more than 8 or 10 feet under water, when between the waves of the heavy swell then rolling over them, which on this part, seemed almost ready to break.

This shoal is rendered more dangerous, as ships generally haul up to the N. Eastward after passing out of Dampier's Strait, to avoid the risk of being set close over on the coast of New Guinea, by the heavy swell and baffling northerly winds which sometimes prevail.

YOWL, or AIOU ISLANDS, consist of a circular group of small low isles, about 20 Yowl Islands.

in number, of various sizes, fortified by an extensive reef which projects around them to a considerable distance, generally 2 or 3 miles, and it is steep to. The southernmost islands, extending nearly East and West about 5 leagues, are 5 in number; and the largest called Aiou, or Baba, is about 3 miles long, having a considerable number of huts on its West end, and is the 4th island from the eastward. It is situated in about lat. 0° 25′ N., lon. 131° 0′ E., or 18 miles West from Point Pigot by chronometer; and the channel betwixt the coast of Waygeeooe and the nearest part of the reef, is about 8 leagues wide. The S. Westernmost island of the group, is detached a considerable distance from the others. The central and southernmost islands, are uneven, and a little higher than the N. Eastern ones, which are low and flat; several of them are inhabited, and they abound with excellent turtle. The N. W. island is in lat. 0° 38′ N., lon. 131° 8′ E., the N. Easternmost in lat. 0° 36′ N., lon. 131° 15′ E., or 2° 4′ East from Catherine's Islands by chronometers; and the northern extremity of the reef that surrounds them, is in lat. 0° 41′ N. Within 30 yards of the breakers, the Lord North's boat, had no ground 60 fathoms.

Geo. site.

Asia's Islands.

ASIA'S ISLANDS, were distinctly pointed out by the ship of this name, on the 1st of July, 1805, in her passage from China to Bombay. On the 12th of January, 1807, the Anna passed between them and the Yowl Islands; and the Cumbrian, Bellona, and Perseverance,* have also passed through this channel at different times, which is 6½ or 7 leagues broad, and clear of danger. When passing near the northernmost of the Yowl Islands, in the Anna, part of Waygeeooe was in sight, and the Asia's Islands were just visible from the deck. They consist of 3 low, level islands, the S. Westernmost of which is smallest, situated in lat. 1° 0′ N., and bears N. 3° E. from the N. Easternmost Yowl Island, distant 24 miles, or in lon. 131° 17′ E. by the Anna's chronometers: but the Asia, made it 2 miles East of Point Pigot by chronometers, or in lon. 131° 20′ E.

The 2 southernmost islands lie near each other; and the other detached from them about 5 miles N. E. by N., has a reef above water projecting from its N. E. extreme, about 1 or 2 miles to the eastward. This island is in lat. 1° 4′ N., lon. 131° 23′ E., or 5 miles East from Point Pigot by chronometers.

## 4th. DAMPIER'S, AND PITT'S STRAITS, WITH SAILING DIRECTIONS: COASTS, ISLANDS, AND CONTIGUOUS DANGERS.

To proceed from the Pitt's Passage, toward Dampier's Strait.

WHEN SHIPS proceeding through the Pitt's Passage, do not go out by the Gillolo Passage, they generally steer to the eastward for Dampier's Strait, betwixt Pulo Popa and the Kanary Islands: this is the narrowest part of the Pitt's Passage, being about 8 or 9 leagues wide. The channel betwixt the Boo Islands and Pulo Popa, and on the North side of the latter, is now frequently adopted by ships bound to, or from Dampier's Strait, in either monsoon, being considered equally safe as that to the southward of Pulo Popa.

Grosvenor's Bank.

GROSVENOR'S BANK, having 4½ fathoms water on it, or *probably* less, on which the Grosvenor anchored at 8 P. M. on the 31st of January, 1763, is the only known danger in the Pitt's Passage, but its situation has not been correctly ascertained; for the following bearings were taken in that ship, when upon it in the *night;* Pulo Popa from E. by N. ½ N. to N. E. ½ E., the body of the island E. N. E. ¼ N., distant about 5 leagues, and the Boo Islands bearing from N. ¾ W. to N. W. by W., distant from the nearest about 3 leagues.

* This ship, passed these islands on the 12th of January, 1807, the same day as the Anna; (but not in company) and gave them the name of Goldsmid's Islands, thinking they were a new discovery, The Lord North, however, saw them on the 19th of July, 1782, or 3 days after discovering the island that generally bears her name.

Although she got on it in the night, the rocks were seen under the bottom; and after weighing, with the boats sounding a-head, the water deepened fast from 4½ to 10, 20, and 30 fathoms, then no ground.

KANARY ISLANDS, bounding the South side of the passage in this part, form an extensive chain of flat, woody, uninhabited islands, stretching along the North coast of Mysole about E. by N., having a narrow passage betwixt some of them, and other isles which lie close to that coast. Grand Kanary, in lat. 1° 44′ S., and about 5 or 6 leagues West from the meridian of the body of Pulo Popa, is of considerable size, and the largest of these islands. On the South side of it, about 4 miles from the East point, there is a pool of fresh water, with anchorage of 6 and 7 fathoms on the North side of the point, between it and the 2 nearest islands. Captain Forrest, who touched at this place, named it Round Harbour; he found soundings near these islands, and channels betwixt some of them, with irregular depths from 9 to 25 fathoms. Kanary Islands, and adjacent small harbours.

He also went to Efbe Harbour, in about lat. 2° 12′ S., which is small, and formed by the Island Efbe, contiguous to the South coast of Mysole: here, he found the small village Efbe, and was well received by the inhabitants.

MYSOLE, is a large island extending East and West about 14 leagues, and about ½ that breadth; the North side of it, fronting the Kanary Islands, is level land of moderate height; and its coasts are lined mostly all round, by a range of small isles. The channel betwixt the East end of Mysole and the West point of New Guinea and Salawatty, is 8 or 9 leagues wide, with several small islands in it, and soundings in the southern part. Mysole.

PULO POPA, is about 5 or 6 leagues in length East and West, including the contiguous isles, which surround its S. W. and western parts; and it is about 3 leagues in breadth. A semicircular hill, like a bee-hive, and another oblong hill, both situated near the N. W. end of the island, render it very conspicuous; for the eastern part, is formed of a considerable extent of low, flat land. It is inhabited, and the S. E. point is in lat. 1° 12′ S., lon. 129° 52′ E., or 1° 26′ West from Point Pigot by chronometer, and the round hill is in lat. 1° 9′ S. The group of small isles off the S. W. part of Pulo Popa, are sometimes called the Tatas; and Calap, is a considerable island near its West end. Deception Island, situated to the N. E. of Calap, and adjoining to the N. W. part of Pulo Popa, appears like 4 separate islands in passing along the North side of it; having 4 different points, each resembling an island, until they are closely approached. Close to, and among these isles which surround the western part of Pulo Popa, there are soundings, but none at 2 or 3 miles distance. When Calap was opening between Deception Island and Pulo Popa, the True Briton in July, 1802, had from 30 to 17 and 15 fathoms water; then 25 fathoms with the round hill on Pulo Popa bearing E. ½ S., and Deception Island from E. by S. to S. W. ¾ W., distance off shore about a mile. She hauled off about 1½ mile, and for a considerable time, carried irregular soundings from 17 to 36 fathoms, shells and coral, then no ground 60 fathoms; when in 12½ fathoms, there was a rippling, but that was the least water she had. On opening the West end of Calap beyond Deception Island bearing S. W. by S., the Boo Islands appeared W. by S., distant 6 or 7 leagues; and when the West end of Pulo Popa was opened beyond Deception Island, a sandy bason was seen on the North side of the former, with shoal water, and a round bush upon a rock in the centre of the bason. Pulo Popa. Geo. site. Contiguous Isles.

CAPE MABO, in lat. 0° 56′ S., lon. 130° 25′ E., or 53 miles West of Point Pigot by chronometer, bearing E. N. E. ½ N. from the S. E. end of Pulo Popa, distant about 13 leagues, is the western extremity of the Island Battanta, which separates Dampier's and Pitt's Straits from each other. Fisher's Island, is small, but high, and fronts the Cape, Geo. site of Cape Mabo. Fisher's Island.

Other isles. bearing W. ½ N. from it about 2 miles distance; these bound the West entrance of Dampier's Strait on the South side, and a chain of low flat islands, bounds it to the N. Westward.

The land of Battanta, and also that of Salawatty on the South side of Pitt's Strait, will be discerned in clear weather, after a ship has passed Pulo Popa on either side; both of these islands, being high bold land.

Dampier's Strait. DAMPIER'S STRAIT, called GAMEN or GEMI by the Dutch, is formed by the island of Battanta on the South, and Waygeeooe on the North side, being about 23 leagues in length from Cape Mabo to Point Pigot; but that part of the strait which has some dangers in it, situated to the northward of Battanta, is only about 11 leagues in length, extending from Augusta Shoal to Mansfield Island. Gamen, is the largest of several islands that border the strait, and appears as part of the South coast of Waygeeooe, being separated from it only by a narrow channel.

KING WILLIAM'S ISLAND, situated to the southward of Gamen, and on the North side of the strait, is high, with a white patch on its eastern extremity; it may be seen 12 King William's, or 13 leagues, and when first discerned in coming from the eastward, 3 hills on it appear like separate islands.

Contiguous to the East end of King William's Island, Hump Island is situated, with a round rocky islet outside of it at a small distance; and several small isles lie near the shore and other islands. of Waygeeooe.

Augusta and Pigeon Islands. AUGUSTA, AND PIGEON ISLANDS, are 2 small low islands, in lat. 0° 37′ S., situated at a considerable distance to the southward of the S. W. end of King William's Island, and bound the North side of the *proper* passage: in landing on them, care is requisite, to prevent boats being injured by the sharp rocks during the ebb tide. To the northward, betwixt these islands and King William's Island, there is said to be several Contiguous shoals and channels. shoals, with intricate channels among them; and although a ship in a clear day, might find a safe passage this way, by keeping a good look out at the mast-head for the shoals, it ought not to be attempted unless in a case of necessity. Neither ought the narrow passage betwixt Augusta and Pigeon Islands, to be attempted; for although the Cornwallis and some other vessels, have gone through this way, there is considerable risk in doing so, it being narrow and formed betwixt steep coral shoals.

Pigeon Island, bears about E. by S. from Augusta Island, and at low water, their shores are separated about ½ a mile: each is surrounded by a coral bank, which does not stretch out far to the southeast, or northward of them; but a chain of coral patches appears to extend 3 miles from them in a S. Westerly direction, with others nearly 2 miles to the westward of them. On the South side of Pigeon Island, the coral bank, with only 3 or 4 feet water on it, projects about ½ a cable's length, then the water deepens fast to 3, 5, and 10 fathoms. From the East end of this island, a reef and sand, partly above water, stretches out ¼ mile, deepening to 5 and 6 fathoms about 1 or 1½ mile from the island. And farther to the eastward, about 3 to 5 miles from Pigeon Island, there is a bank of coral and sand about 3 miles in extent, with various depths on it from 8 to 14 or 15 fathoms. This bank affords anchorage to ships stopping tide, or during the night, for there is thought to be no Bank of anchorage. less than 6 or 7 fathoms water on it, and these depths are generally found on the West part, near the reef that projects from Pigeon Island.

The narrow channel betwixt Augusta and Pigeon Island, has 30 fathoms water in the middle of it, when in a direct line between them; and from 20 to 10 fathoms in the western part, about a mile from Augusta Island. The coral banks bounding it on each side, appear to have 2½ or 3 fathoms water on them at low tide; consequently, there is depth

sufficient for a small vessel. The sharp coral rock, lining the shores of these islands, render them inconvenient for wooding at, the landing being difficult, and the tide ebbs and flows, 11 or 12 feet perpendicular.

FOUL ISLAND, situated about 3 leagues to the E. S.Eastward of Pigeon Island, betwixt the East end of King William's Island and the North shore of Battanta, is level and small, nearest to the latter, and bounds the proper channel on the South side. This is the narrowest part of the strait, for Foul Island ought not to be approached under 3 miles, on account of the Vansittart's Shoal. Foul Island.

MANSFIELD ISLAND, bearing nearly East from Foul Island, about 2½ or 3 leagues distance, is a white sand bank, covered with a clump of tall trees, situated on the South side of the strait, upon the edge of the Vansittart's Shoal. There is another island of similar appearance, about a mile inside of Mansfield Island, with some others contiguous to the Battanta shore, scarcely discernible in passing. Mansfield Island and others.

VANSITTART'S SHOAL, resembles nearly in shape a right-angled triangle, stretching a great way out from the North side of Battanta; Foul Island being situated near the angular point, distant 2½ or 2 miles from the N. W. extremity of the shoal; and 2 sand banks dry at low water, which lie on the western extremity, bear from Foul Island W. by S. ¼ S., distant about 4 miles. The North side of this extensive shoal, takes an easterly direction from its N. Western angle, toward the East end of Battanta, having Mansfield Island on its northern edge; and being steep to, all round, it ought not to be too closely approached. The True Briton's boat, had from 40 fathoms near the western edge of the shoal, to 20 and 10 fathoms suddenly, then 4 feet upon it, with the 2 sand banks bearing from S. E. ½ S. to S. E. ½ E., distant ½ a mile, Foul Island E. by N. about 2 or 3 miles, West extreme of Battanta W. S. W. ½ S., and the West end of Augusta Island N. W. by W. From hence, steering about E. by N. on the edge of the shoal in 1½ to 4 fathoms, she had at the distance of a cable's length on the same course 39 fathoms, 1 of the sand banks bearing S. ½ W., the other S. W. by W., Foul Island E. by N. ¼ N., West end of Battanta W. S. W. ¼ S., the East end of Augusta and West end of Pigeon Islands in 1 N. W. ½ W. With Mansfield and Foul Islands in 1, had suddenly from 37 to 4 fathoms, then 3 feet: with Foul Island bearing E. ½ S. distant 1½ or 2 miles, and Augusta Island W. N. W., she had from 21 fathoms, suddenly to 3 and 2 feet on the edge of the shoal. Vansittart's Shoal.

About 3 or 3½ leagues S. W. from Foul Island, and near the S. Western extremity of the Vansittart's Shoal, there is a bay formed on the Battanta shore, with a fresh water river, bearing nearly South from Pigeon Island. Here, wood and water may be got, but as some habitations adjoin, boats should be on their guard, for these islands are inhabited partly by Papuas from the coast of New Guinea, who are in a savage state. About a mile off the entrance of this river, there are soundings from 20 to 30 fathoms, decreasing to 17 and 18 fathoms on a bank farther out, about 2 or 2½ miles North from it.

There is a small bay about 4 miles to the westward of the fresh water river, having some islands in it covered with mangroves, where the landing is very difficult: soundings generally of deep water, extend along this N. Western side of Battanta, to the distance of about 2 leagues from the shore. Fresh water river.

Exclusive of Vansittart's Shoal, and those projecting from Augusta and Pigeon Islands, there appear to be several detached coral patches in Dampier's Strait, only 1 or 2 of which are known to be dangerous, and they have generally deep water contiguous to them.

AUGUSTA SHOAL, bearing from Augusta Island W. by S. distant 2 leagues, is a small patch of coral on which the Princess Augusta had 4 fathoms; but there seems to be Augusta Shoal.

several shoal spots near this situation, having too little water on them for large ships, consequently, ought to be avoided. The Buccleugh, struck on 1 of them on the 26th of August, 1797, whilst in stays; having perceived the water discoloured, the helm was put down, and the ship immediately struck, but came round, then fell into 17 fathoms water. At this time, Augusta Island bore E. by N. $\frac{1}{4}$ N., Pigeon Island E. by N., and the West point of Battanta about S. by W. $\frac{1}{4}$ W. The Woodford got into danger, at a greater distance westward of Augusta Island, on the 1st. of September, 1797: she struck, and lost way for a few minutes, had 4 fathoms rocks by the lead; but as no discoloured water was seen a-head, she continued to stand S. W. with the wind at S. S. E., and having run about 2 cable's length, struck again, and had 6 fathoms rocks in the chains. The helm being then put down, the ship came round, stood East under a press of sail for about 10 or 15 minutes, and seeing the appearance of shoal water on the lee bow, tacked to the S.W., and deepened gradually from 25 fathoms to 40 fathoms no ground. The attention of all on board having been directed to the safety of the ship, no bearings were taken until this time, Augusta Island then bore E. N. E. $\frac{1}{2}$ N. distant about 6 leagues, Pigeon Island E. N. E. just in sight from the poop, body of King William's Island N. E. by E., Fisher's Island S. $\frac{1}{2}$ W. 5 or 6 leagues, Cape Mabo S. $\frac{1}{2}$ E., and the chain of low islands from N. W. by N. to W. $\frac{3}{4}$ S. Although, unfortunately, the true situation of these rocky patches cannot be ascertained by this description taken from the Woodford's Journal, they *probably* bear about W. by S. or W. by S. $\frac{1}{2}$ S. from Augusta Island, distant 5 or 6 leagues. These dangers are avoided by keeping within 3 leagues of the N. W. side of Battanta, until Augusta and Pigeon Islands bear well to the northward.

Other shoal patches.

How to avoid them.

Shoals near Augusta Island.

OTHER SHOAL PATCHES, project from Augusta Island to the S.Westward, the outermost of which is about $\frac{1}{2}$ a cable's length in extent, having 4$\frac{3}{4}$ fathoms coral rock in the centre, deepening to 10 and 20 fathoms toward the edges. Foul Island bears from it E. by S. $\frac{1}{2}$ S., the East part of Pigeon Island E. N. E. $\frac{1}{2}$ N., and the body of Augusta Island N. by E. $\frac{1}{2}$ E. distant 2$\frac{1}{2}$ or 3 miles.

Soundings.

The soundings to the eastward of Pigeon Island, deepen fast from thence toward the N. W. edge of the Vansittart's Shoal, and are very irregular, with deep holes in some parts. The Glatton anchored in 40 fathoms rocky bottom, with Foul Island bearing S. E. 4 or 5 miles, Hump Island N. N. E., the West part of Battanta W. by S., and in tending with her head to the northward, no ground could be obtained with 140 fathoms of line.

From the bank of anchorage eastward of Pigeon Island, the water also deepens fast to the North, toward the East end of King William's Island, there being no ground 90 fathoms about a mile off it.

Coast of Waygeeooe.

To the northward of King William's Island, there are dangerous shoals, some of them sand banks even with the water's edge; and 2 considerable villages on the Waygeeooe shore adjacent, are fronted by a coral shoal steep to, rendering the approach to them unsafe. These villages lie to the N. N. Eastward of Hump Island, on the West side of the mouth of a large strait, full of islands, which separates Gamen from Waygeeooe. The inhabitants of these villages sometimes come off in their canoes to ships passing, bringing with them coarse matts, bows and arrows, birds of paradise, with a few pumpkins, which they will exchange for white cloth; but they seem very poor, possessing no articles of consequence.

THE WAYGEEOOE SHORE, betwixt King William's Island and Point Pigot, ought not to be too closely approached, for there appear to be some shoals near it. The Grosvenor, on the 9th of February, 1763, discerned shoal water, and the boat found 9 feet rocks and sand upon it, with no soundings at 60 fathoms close to. After tacking, the body of the rocks were seen from the masthead bearing N. E. $\frac{1}{2}$ N., distant about 3 miles, Waygeeooe from E. by N. $\frac{1}{2}$ N. to W. $\frac{1}{2}$ S. about 3 leagues distant, a small island

Shoals adjacent.

off it E. by N., the South end of King William's Island W. by S. ½ S., and the East end of Battanta S. by W.

If you intend to proceed through Dampier's Strait, haul up near the Boo Islands, and pass on the North side of Pulo Popa if the wind incline at N. W., in order to lead round Fisher's Island into the entrance of the strait, without losing time. If, however, night is approaching, it may be advisable to pass on the South side of Pulo Popa, and after rounding its eastern extremity, haul up N. E. or N. E. by N. for Dampier's Strait; because, the current sets generally S. E. or southward, which makes the passage to the northward of Pulo Popa preferable, when circumstances are favorable; but care must be taken to give a birth to the chain of low islands situated to the N. W. and W. N. W. of Cape Mabo, about 8 leagues distant; for there may be dangers in their vicinity, exclusive of the shoal patches to the eastward, between them and Augusta Island. They are all avoided, by borrowing toward the western shore of Battanta, which is bold, and is the safe side of the channel to preserve. To sail from Pulo Popa, toward Dampier's Strait,

When Cape Mabo is brought to bear South, keep within 3 leagues of Battanta, and do not bring Pigeon Island to the eastward of E. N. E. or E. N. E. ¼ N., by which means Augusta Shoal, and the other patches bordering the North side of the channel, will be avoided; for they *seem* to extend in a direction about W by S. or W. by S. ½ S. from Augusta Island about 6 leagues, or nearly to the chain of low islands.

Having passed about 3 or 4 leagues to the N. E. of Fisher's Island, soundings will be got along the shore of Battanta, which extend across to the North side of the channel in some places, and to Augusta and Pigeon Islands; but the soundings are generally irregular, from 70 to 35 fathoms, except where they decrease near to, or on the edge of some of the shoal patches contiguous to the North side of the channel. As the bottom is generally foul, it is prudent to use a light anchor, if obliged to stop tide; because, several ships have been obliged to leave their anchors behind, on account of them hooking the rocks.

When the West part of Battanta is approached, keep within 3 leagues of it in steering to the N. Eastward, with Augusta Island bearing about N. E. by E.; or if Mansfield Island is discernible, and kept on with the South end of Foul Island, you will pass clear to the southward of the shoal patches which border the North side of the channel. Having brought Augusta Island to bear N. by E. about 4 or 5 miles distant, haul more to the northward, to give a birth to the western part, and N. W. angle of Vansittart's Shoal, by passing at a convenient distance of 2 or 3 miles, on the South side of Pigeon Island. Betwixt this island and Vansittart's Shoal, is the narrowest part of the strait, being 2½ or 3 leagues wide; and to avoid the edge of the shoal, which is steep to, Foul Island ought not to be approached under 4 miles distance, when it bears between East and S. S. E. When this island is brought to bear S. by E. or South, there are no more soundings: but in steering to the eastward, keep considerably to the northward of a direct line joining Foul Island and Mansfield Island, for that line passes over the North part of Vansittart's Shoal. and through that strait,

BANK OF SHOAL SOUNDINGS, from 6 or 7, to 12 or 14 fathoms, extending 4 or 5 miles to the eastward of Pigeon Island, is very convenient for anchoring upon occasionally to stop tide, or during the night, the bottom consisting of sand and gravel in some places; and on its eastern extremity, where the water deepens, the ground becomes soft. To the S. E. and southward of Pigeon Island, there are soundings of 12 to 15 fathoms coral rock, on some patches; the bottom in general throughout the strait, is rocky, affording very bad anchorage, except in a few parts, it is a little soft, or consisting of sand mixed with shells and coral.

Having passed through the narrow part of the strait, by keeping nearer to Pigeon Island than to Foul Island, when the former bears W. by S., steer a direct course about E. by N. or E. by N. ½ N. for Point Pigot. Several small islands will be discerned near the shore to Point Pigot.

of Waygeeooe, and some inlets or bays, which ought not to be approached too close; for the shoal seen by the Grosvenor seems to lie at a considerable distance from that shore, and there may be others contiguous to the coast, not yet explored. Point Pigot ought to be passed pretty close, in going out of the strait, to prevent being driven close to the coast of New Guinea by the northerly swell, that generally prevails outside; but care must be taken to give a birth to the Buccleugh's Shoal.

Geo. site of Point Pigot.

POINT PIGOT, the S. E. extremity of Waygeeooe, in lat. 0° 21′ S., lon. 131° 18′ E. by our chronometers from Batavia, and I made it the same by lunar observations,* is moderately elevated, having 2 little islands covered with the trees, fronting it at a small distance to the southward. The channel betwixt this point and the coast of New Guinea, is about 8 leagues wide, and the 3 different routes, by Dampier's, Pitt's, and Revenge's Straits, are here united into 1, leading out into the Pacific Ocean. Ships bound out, take their departure from Point Pigot, and when approaching these straits, they generally endeavour to fall in with this point. The variation off it in 1793, was $1\frac{1}{4}$° Easterly.

Tides or currents, in Dampier's Strait, and in its vicinity.

THE TIDES, in Dampier's Strait, which rise from 10 to 12 feet perpendicularly on the springs, run frequently strong, but are very irregular. Toward the western entrance of this strait, betwixt Pulo Popa and Cape Mabo, there is frequently a current setting to the southward during the N. W. monsoon, from September to April; but subject to deviations, from winds or other secondary causes. In the same place, there is generally a N. W. or Northerly current, during the Southerly or S. E. monsoon; although at times, there is little or no current.

At the eastern entrance of the strait, betwixt Point Pigot and New Guinea, there appears to be a tide running about 12 hours each way; but the ebb that sets out to the eastward, is generally strongest in both monsoons, and has been experienced sometimes in the southerly monsoon, to run out 2 or 3 days together, only slacking a little when the flood ought to set to the westward.

Although these easterly tides or currents, are frequently found to set out betwixt Point Pigot and New Guinea, during the S. E. monsoon, this is not always the case; for strong N. W. currents, sometimes sweep along the North coast of Waygeeooe, whereby several ships, in March and April, have been drifted between that coast and the Yowl Islands, when baffled by light airs of wind. Others, steering to fall in with Point Pigot, in July or August, have been carried to the northward of the Yowl Islands, and Asia's Islands, by a strong N. W. current.

In the narrow part of Dampier's Strait, bounded by Foul Island and Vansittart's Shoal to the S. Eastward, and by Augusta and Pigeon Islands to the N. W., the tides seem to be very irregular in both monsoons, and run with great velocity about the full and change of moon. During the strength of the N. W. monsoon, in December, January, and February, the tide to the eastward generally prevails, in duration and velocity. In this season, the ebb sometimes runs to the E. N. Eastward 6 or 8 hours together, or even longer, from 4 to 5 knots, when strongest in the springs: at other times, it only runs 4 or 5 hours in that direction, from 1 to 3 knots during neap tides. The flood runs to the S. Westward, seldom above 3 or 4 hours; and in this season it is generally weak.

In this part of the strait, during the strength of the southerly monsoon, from May to September, the flood sets through to the westward, frequently 8 or 10 hours together. At

* This longitude of Point Pigot is probably within 1 or 2 miles of the truth, as Captain Torin of the Coutts, Captain Seton of the Helen, and Mr. Stone of the Asia, all agree in making it in lon. 131° 18′ E. by chronometers; Mr. Brown, made it in lon. 131° 19′ E. by chronometer from Canton, and Captain Williams made it in 131° 17′ E. by the same means.

first, it runs about W. S.W., gradually increasing in strength, changing to S. W. or S. W. by S., when strongest; the greatest velocity being about 5 miles per hour, or rather more at times, on high spring tides; and about 4 miles during the neaps. After running strong to the S. W. for a few hours, it abates gradually in strength until it changes and sets to the eastward, from 3 to 5 hours, but seldom strong. The ebb tide, setting through the narrow part of the strait betwixt E. N. E. and N. E., is seldom strong, or of long continuance, in this season; for it often runs only about 1 mile per hour, appearing as a slack between the returns of the strong S. Westerly tide: but at times, the tide to the eastward has been experienced to run for an hour or two, at the rate of 4 knots, even in this season; and both tides, run strongest near the edges of the reefs. On the day of full moon, in July, we found the tide begin to set to the S. Westward at 7 P. M., which continued strong until midnight, the moon being then on the meridian; after midnight, it gradually abated in strength, and at day-light there was no tide.

Pitt's Strait.

PITT'S STRAIT, called SAGEWYN by the Dutch, is bounded on the North side, by the Island Battanta; and on the South side, by the North coast of Salawatty, and the group of small islands stretching from thence to the adjacent coast of New Guinea. The West entrance bears about E. by N. $\frac{1}{4}$ N. from the S. E. point of Pulo Popa, distant 18 or 19 leagues; and the length of the strait, from the West point of Salawatty until clear of the reef off the East point of Battanta, is about 13 or 14 leagues: the greatest breadth is about 7 or 8 miles, and the narrowest part only 4 or 5 miles from side to side.

The shore of Salawatty is mostly steep to, and except in some places where rocks line the Battanta shore to the distance of nearly a $\frac{1}{4}$ mile, it is also bold to approach. But the high land on each side, subject this strait to frequent calms, and the rapid tides in it being attended with strong eddies, ships are thereby rendered ungovernable, and sometimes they are drifted back and forward through the strait, or against its shores. The preference, is therefore, now, justly given to Dampier's Strait, where in the narrowest part, there is anchorage; nor ought Pitt's Strait to be adopted unless in a case of the greatest necessity.

ought not to be adopted.

About 2 leagues to the eastward of Cape Mabo, there is said to be a reef near the southern shore of Battanta. The Ponsbourne got water in a small bay farther to the eastward, where she anchored in 45 fathoms dark sand, about $\frac{1}{2}$ a mile off shore; the watering place in the bay then bearing N. 8° W., West extreme of the bay W. 6° S. distant $\frac{1}{2}$ a mile, East point of the bay E. 3° N. with the eastern extremity of the island shut in behind it, West end of Salawatty S. 35° E., and the westernmost of the isles outside of it S. 5° E.

Watering place on Battanta.

Inside of this strait, there is no anchorage on the Battanta side until near its eastern extremity, except too close to the shore for large ships; and a ledge of rocks projects out about a $\frac{1}{4}$ mile in some places, with 16 or 20 fathoms close to, and the next cast upon it from 6 to 8 feet.

Rogewyn Island.

REGEWIN, or ROGEWYN ISLAND, situated near the southern shore in the West entrance of the strait, is small, and sometimes called Passage Island. There is a bank of soundings to the eastward of it, with anchorage near the Salawatty shore, where several ships have remained during the night. The Warwick, at anchor in 30 fathoms upon this bank, had Rogewyn Island bearing W. $\frac{1}{2}$ S., about 6 or 7 miles, open with the point of Salawatty about a sail's breadth, a considerable village to the eastward, and a fine fresh water river about $\frac{3}{4}$ of a mile to the westward of the anchorage, with 3 small streams adjoining. Betwixt it and the village, 25 fathoms water are found about $\frac{1}{2}$ a mile from the shore.

Anchorage close to the Salawatty Shore, and fresh water.

The Lord Holland anchored farther to the eastward, in 58 fathoms fine gravel and small shells, about $\frac{1}{4}$ mile off shore, and $2\frac{1}{2}$ miles inside of the 3d point of Salawatty, counting from the East end of the strait: Jackson's Island was then on with the eastern extreme of

Salawatty bearing E. 4° N., extreme of New Guinea E. 20° N., and Battanta from N. 32° E. to West. The Cutter, a little farther to the westward, got 40 fathoms, decreasing regularly to 8 or 7 fathoms close to the rocky shore; and the officer found a stream of good water, convenient for watering a ship. Farther to the eastward, the Salawatty shore becomes very steep; and Jackson's Island is of considerable height, at some views resembling a spoon, and is situated near the N. E. point of Salawatty, at the entrance of the strait, in coming from the eastward. On the 9th of July, 1813, the Volunteer anchored in 33 fathoms, to the East of Regewin Island, and carried a hawser to the trees to steady the ship, which was slipped at the turn of the tide, to prevent the ship from swinging on shore. The Volunteer, also anchored on the 7th of July, in 27 fathoms fine black sand, with Jackson's or Lipel Island bearing N. W. distant $\frac{3}{4}$ of a mile. Between the 4th and 5th points of Salawatty counting from Jackson's Island, there is a bay about $1\frac{1}{2}$ mile deep, with soundings of 32 fathoms within the line of the 2 heads which form it; and not less than 30 fathoms sandy bottom within $\frac{1}{2}$ a mile of the bottom of the bay. Captain Waterman, of the Volunteer, while sounding this bay, saw several places like runs of fresh water on the shore, and although the tide was running 4 miles per hour outside, he perceived neither tide or eddies within the heads of the bay; but the ship was carried close to the 5th point by the tide, and brought up about 20 feet clear of the rocks which project from that point.

There is a deep bay on the South side of Battanta, near the East end of the strait, with an island in its entrance; and close to the East part of this island, stands a rock, with some bushes on it, where a ship may anchor occasionally, with the rock bearing about North distant 1 mile. There seems to be a considerable passage to the eastward of the island, leading into the bay, which may probably form a good harbour, and there appears to be a town at the bottom of it. The Glatton anchored near this place in 38 fathoms fine brown sand, the North end of Jackson's Island bearing E. by S. $\frac{1}{4}$ S., eastern extreme of Salawatty E. S. E. Easterly, West point of Regewyn Island W. S. W., southernmost point of Battanta W. by S. $\frac{1}{2}$ S., easternmost point of Battanta N. by E. $\frac{1}{2}$ E., off the Battanta shore 2 miles.

Anchorage near the East end of Battanta;

Betwixt the East end of Battanta and the first point to the westward, there is a bay filled with small islands; and a bank of soundings extends from thence about $3\frac{1}{2}$ leagues to the eastward, with overfalls and generally rocky bottom on it, the water deepening fast on its southern part, but the North side of it is dangerous.

Bank of soundings in the eastern part of Pitt's Strait.

BATTANTA REEF, or ROCKY SHOAL, extending nearly 3 leagues East from the East end of Battanta, forms the northern side of the bank of soundings mentioned above, and it is composed of patches of rocks having only 3 and $3\frac{1}{2}$ fathoms on some of them. The Pigot, when aground on 1 of these patches, had Jackson's Island bearing S. $\frac{3}{4}$ W., eastern extreme of Battanta West a little southerly, and its western extreme on with Salawatty S. W. by W., northern extreme of New Guinea East northerly, off Battanta about 2 leagues. The Glatton in 6 fathoms rocks, had Jackson's Island bearing S. by E. $\frac{3}{4}$ E., Battanta from W. $\frac{3}{4}$ N. to S. W. $\frac{3}{4}$ W.; standing from hence N. E. by E. $1\frac{1}{2}$ mile, deepened fast to 32 fathoms, Jackson's Island then S by E. $\frac{1}{4}$ E., Battanta from W. $\frac{1}{4}$ N. to S. W. $\frac{3}{4}$ W. The Thames, after discerning the rocks under her bottom, hauled off, and anchored in 17 fathoms, but swung into 10 fathoms coral rock, the East point of Battanta bearing W. by N., Pitt's Strait S. W. by W., and Jackson's Island S. 6° E. The boats found the soundings very irregular, till they got, 6, 5, 4, and $3\frac{1}{2}$ fathoms on the rocks about 1 mile West from the ship, with 6 and 8 fathoms around them. The Buccleugh, in company with the Thames, anchored the same day, on the 14th of February, 1797, in 15 fathoms coral and sand, with Jackson's Island bearing S. 15° E., and the East point of Battanta W. $\frac{3}{4}$ N., off shore about 4 miles; the boat found only 3 fathoms coral rock, about $\frac{3}{4}$ of a mile N. by W. from the ship.

Reef off the East end of Battanta.

The bank of soundings, lining tne South side of Battanta Reef, extends about 3 leagues

nearly E. N. E. and W. S. W., or with Jackson's Island bearing between S. E. and S. by W. Although ships may anchor occasionally on its southern part, in from 20 to 30 fathoms to stop tide, they ought not to borrow over toward the dangerous spots on its northern side, nor bring the East point of Battanta to bear so far to the westward as W. by N., until they lose soundings on the eastern extremity of the bank. The tides being strong, and the bottom generally foul, render the anchorage on this bank disagreeable; particularly in the northerly monsoon, when a swell rolls in over it from the N. Eastward.

How to pass clear of it.

Pitt's Strait ought only to be adopted in a case of particular necessity. The Thames, in company with the fleet, consisting of 6 ships, bound from Europe to China, passed through Pitt's Strait, on the 14th of February, 1797: they entered in the evening with a light westerly breeze, followed by a calm in the night, and the tide having set almost in every direction during the night, some of the ships were drifted out, and into the strait again, before morning. About sun-rise, the tide set rapidly to the eastward, with strong eddies, and at 8 A. M. it changed, and set with equal violence to the westward: some of the ships at this time, were near the Salawatty Shore, in the eastern entrance of the strait, and the swell and tide setting toward that shore, the Thames had great difficulty in clearing it, with 3 boats towing her head off shore, and a faint breeze from the eastward. The Walmer Castle, when close to the Thames, was taken by a strong eddy upon the bow, which set her directly on the Salawatty shore, where she had 3 fathoms on 1 side and 30 fathoms on the other. After being driven along the steep bank some time, breaking the boughs of the trees with her yards, she got clear without damage, with the assistance of a light air that came off the land, and the boats of the fleet towing.

Pitt's Strait, perplexing and dangerous.

Shortly after, the Canton and Taunton Castle, were drifted about in Pitt's Strait on the 23d and 24th of February, 1797, sometimes from 1 end to the other. The Canton was at 1 time drifted within a cable's length of the Battanta shore, in 40 fathoms water; at another time, within 2 cable's lengths of the Salawatty shore, and had no ground 120 fathoms. After getting to the East end of the strait, they were drifted out of it again to the westward, then proceeded round the West end of Battanta, and passed through Dampier's Strait. Other ships, have at various times, been drifted about in Pitt's Strait, by the strong eddies, were in danger of getting on the rocks, and after considerable delay, have proceeded through Dampier's Strait. The Volunteer, entered Pitt's Strait, bound to the westward, on the 7th of July, 1813, and after being obliged to anchor twice, in dangerous situations, close to the Salawatty shore, where she lay during a squally dark night, and was driven backward and forward by the tides when under sail in the day time, got clear out of the strait on the 9th; and Capt. Waterman, of that ship observes, "that nothing will ever induce him to go through Pitt's Strait again." It, however, sometimes may happen, that a ship entering Pitt's Strait with a steady breeze, and the beginning of a favorable tide, will get speedily through; but as these instances are rare, it should be avoided if possible.

If *obliged* to pursue the route through Pitt's Strait, keep as nearly as possible in mid-channel, that the eddies may be less liable to drift you close to either shore: be not induced by any favorable shift of wind, to approach the shore, but continue to make short tacks in the middle of the strait. When Jackson's Island is seen, steer to pass to the northward of it, at not more than 4 or 5 miles distance, to avoid the reef off the East end of Battanta; which having cleared, haul to the northward near Point Pigot, because several ships after passing out of these straits, have been embarrassed with the coast of New Guinea.

Caution to be observed in sailing through it.

GALOWA STRAIT, formed betwixt the Island Salawatty and the coast of New Guinea, is generally called Revenge's, or Watson's Strait, because Commodore Watson, in the Revenge frigate, went through it in 1764. Lieut. M'Cluer, went through it with the Panther and Endeavour, when surveying the coast of New Guinea in 1790; but it is very contracted in some parts by numerous small islands and shoals, and being out of the direct route

Galowa Strait.

of ships proceeding to, or from the Pitt's Passage, it is properly avoided by merchant ships. At the North part of it, a chain of islands stretches from Jackson's Island, (the nearest to the N. E. part of Salawatty) across to Cape Spencer, the opposite point of land on New Guinea. There are soundings of various depths through this strait, and amongst the islands in its northern entrance, with anchorage in many places; but Jackson's Island has deep water very near it on the North side, and there is said to be some shoals to the southward, with anchorage inside of it, near the Salawatty shore.

Cape Spencer, called Foul Point by the Dutch, is moderately elevated; and reefs project to the N. Westward from it and the adjoining islands, to the distance of 1½ or 2 miles.

## *INSTRUCTIONS for SAILING from DAMPIER'S STRAIT toward CHINA: COASTS, ISLANDS, and DANGERS, adjacent to the PASSAGE.*

Caution requisite in sailing out of Dampier's Strait.

SHIPS proceeding out of Dampier's Strait into the Pacific Ocean, in December and January, (when northerly winds are liable to blow in sudden squalls outside, with a heavy swell rolling in upon the coast of New Guinea) ought to be careful to keep well up toward Point Pigot, and pass within 2 or 3 miles of the small islands that front it; they ought then to haul well up to the N. Eastward if the wind permit, to avoid the coast of New Guinea; but care must be taken to keep the small island off Point Pigot, or that Point itself, to the westward of W. 30° S. until it or the point is sunk from the deck of a large ship, in order to give a birth to the Buccleugh's Shoal, described under the head "Gillolo Passage."

On the 4th of January, 1806, the Mangles, in going out of the strait, passed Point Pigot at 5 leagues distance, then encountered severe squalls at N. Westward, with torrents of rain, and intervening calms. The sudden heavy gusts of wind, not permitting them to carry sail sufficient to keep the ship close to the wind, she was driven by the heavy swell on the beam, within a few miles of high breakers on the coast of New Guinea.

Finding they could not clear the coast on either tack, and the ship drifting at the rate of 1 mile per hour toward the breakers, the anchors were prepared to let go, although not in soundings. Fortunately at 5 P.M. on the 6th of January, a steady breeze came at W.N.W., with which a press of sail was carried, steering N. E. by N. during the night; notwithstanding, in the morning it was perceived, that they had weathered the Islands Middleburgh and Amsterdam, not more than 5 or 6 miles.

The Lord North, was from the 12th to the 17th of December, 1781, from Point Pigot until she got clear of the coast of New Guinea; being baffled with northerly winds, much rain, and a heavy swell from N. N. Eastward.

North coast of New Guinea.

COAST OF NEW GUINEA, from Cape Spencer, stretches about E. N. E. toward the Cape of Good Hope, forming a concavity, with some small bays; and several villages of the native Papuas, are interspersed along the shore. The North coast of New Guinea, is generally high, but in some places low land fronts the sea: a little way inland, a chain of mountains extends parallel to the coast, which is covered with trees, and elevated in some places, from 4000 to 5000 feet above the level of the sea.

Threshold Point, and adjacent coast.

THRESHOLD POINT, about 6 leagues to the eastward of Cape Spencer, has a deep bay on the East side of it, filled with reefs, which surround a small island; and there is low

land at the bottom of the bay;* the coast betwixt these headlands, being lined by steep rocky shoals, ought not to be approached.

From Threshold Bay eastward, there are soundings from 20 to 60 fathoms in many places, within 1 or 2 miles of the shore; but in some parts, reefs project to the distance of 2 or 3 miles.

BREBES POINT, or CAPE WILSON, in about lat. 0° 29′ S., and 5 leagues to the S. Westward of Middleburgh Island, has a small bay on the East side, with from 10 to 30 fathoms water in it, and reefs on each side of the entrance. Betwixt the reef projecting around Cape Wilson, and another reef about a league off shore, there appears to be 12 and 13 fathoms water, with 30 or 40 fathoms close to the outer reefs. From hence, nearly to Middleburgh Island, the coast is steep, having from 60 to 80 fathoms water near the shore. Cape Wilson, and the coast eastward.

AMSTERDAM AND MIDDLEBURGH, are 2 low flat islands surrounded by a reef, bearing N. W. and S. E. from each other, distant about a mile. Amsterdam, the outermost, is in lat. 0° 19½′ S., lon. 132° 15′ E. by chronometer from Point Pigot, bearing nearly West from the Cape of Good Hope, distant about 5 leagues, and from the coast abreast about 2 or 2½ leagues. The reef projecting from this island is steep to, having 50 fathoms water near, and 4 or 5 feet upon it in some places. The Geelvink, found soundings of 8 and 10 fathoms betwixt the shore and Middleburgh Island, with anchorage to the S. S. W.; and to the eastward betwixt it and the Cape of Good Hope, soundings of 15 to 40 fathoms, sandy bottom, extend about 3 or 4 miles out from the coast, where a ship might anchor in a case of necessity. Geo. site of Amsterdam Island, Middleburgh Island.

CAPE OF GOOD HOPE, in lat. 0° 20′ S., lon. 132° 31′ E. or 1° 13′ E. from Point Pigot by chronometer, is a low rugged point of whitish appearance; and nearly East from it 4 or 5 leagues, lies Tuft Point, which is sometimes mistaken for the former. This is the northernmost part of the coast of New Guinea, and there are soundings near it; but farther to the eastward, it becomes steep to, in most places. In the bay, on the East side of Tuft Point, there are some shoals; and another shoal lies about 13 leagues to the eastward, in a bay to the westward of the Bee Hive Mount, which is situated near the sea, and resembles a bee-hive or hay-stack. Geo. site of Cape of Good Hope, adjoining coast.

GEELVINK'S BAY, about 3½ leagues to the eastward of the Bee Hive, has rocks on each side of the entrance, with a small islet on the West side, environed by a reef. There are 20 and 25 fathoms water in this bay, where the Geelvink anchored in 1705, and procured wood and water, on the western shore, inside: it stretches a considerable way inland, where it becomes very narrow, and terminates at a fresh water river; the land on the East side of this bay, is low contiguous to the sea. Geelvink's Bay.

FLAT POINT, in about lat. 0° 46′ S., lon. 134° 25′ E., bearing from the Cape of Good Hope about E. 13° S., distant 39 leagues, forms the western extremity of the great bay on the North side of New Guinea, which extends inland about 60 leagues, nearly to the South coast; and with M'Cluer's Inlet, stretching from the West coast nearly to the western side of this great bay, the large island of New Guinea is almost cut into 3 islands. About 5 miles inside of Flat Point, Dory Harbour is situated, having 2 islands in the offing, and a bank of coral rocks fronting the entrance, with the high mountains of Arfak inland to the westward. In the great bay, there are many islands and shoals, with soundings in general Geo. site of Flat Point. Great Bay.

* The Dutch charts of the Geelvink's voyage, place anchorage to the eastward of the shoals in this bay, opposite to a high point, where there is fresh water.

near its shores, which are intersected by other bays, in several places. The Geelvink circumnavigated this spacious bay, and watered at its southern extremity.

Mysory and other islands.

MYSORY, or SCHOUTEN'S ISLAND, bounding the entrance of the Great Bay on the East side, is high, about 20 leagues in extent W. N. W. and E. S. E., its northern extremity being in lat. 0° 37′ S., and its western part, is distant about 20 leagues, nearly East from Flat Point. Long Island lies between them, a little inside of the entrance of the bay; and Traitor's Islands, form a large range, projecting from the S. E. point of Mysory, the innermost of which are surrounded by a reef.

There is a FIVE FATHOM'S BANK, to the northward of Mysory, extending about 3½ miles upon the equator; with the Island Mysory just in sight from the deck bearing South, Capt. Eastwick had soundings of 5 fathoms the least water on this bank, and made its extent as stated above.

Jobie.

JOBIE, is a high island of great extent East and West, with other islands contiguous; these front Mysory and Traitor's Islands, to the southward, and there is a wide channel between them.

Capt. Bristow, in a southern whaler, touched at Jobie a few years ago, where he lay about 14 days, and put a streak of new copper on his ship; during which time, for mere trifles, he procured some poultry, plenty of yams, and all sorts of tropical fruits. Nevertheless, it is prudent for every ship which may have occasion to stop at any part of the circuitous coasts of New Guinea, to be constantly guarded against the perfidy of the natives, who are in a state of savage ignorance.

There is a passage betwixt the East end of Jobie, and Geelvink's Point opposite on New Guinea, leading into the great bay, which is called the South Passage: a reef projects from Geelvink's Point, but there are regular soundings and good anchorage inside of it, which extend from thence, along the whole of the eastern side of this remarkable bay.

Stephen's Island.

About 24 leagues to the E. N. E. of Mysory, in lat. 0° 21′ S., lie 2 small isles, which Captain Carteret named STEPHEN'S ISLANDS, when he saw them in 1767.

Providence Islands;

PROVIDENCE ISLANDS, 2 in number, situated to the N. Westward of Mysory, and fronting the North entrance of the great bay, have a channel about 4 or 5 leagues wide between them, through which Dampier passed twice. The S. Easternmost called Great Providence Island, is largest; the other being a low sandy isle covered with trees, and surrounded by rocks.

Geo. site.

This, called Little Providence, or Danger Island, is situated in lat. 0° 11′ S., lon. 135° 12′ E.; a coral shoal projects from it to the southward about ½ a mile, and stretches to the N. W. in the form of a half moon, to the distance of 3 or 3½ leagues from the island. The Cornwallis got on the edge of this shoal with the island bearing S. S. E., distant 1½ mile, and tacked when the rocks were seen along side, but there seemed to be about 8 fathoms water. The form and extent of the shoal, were clearly discerned from the mast-head, on the middle of which, the sea broke; and on its northern extremity, the water appeared like a confused strong rippling. The N. Western extremity of this shoal is in lat. 0° 1′ S., lon. 135° 8½′ E.; and to avoid it, ships coming from the eastward, should keep in lat. 0° 10′ to 0° 20′ N.

Geo. site of Cornwallis Shoal.

These islands are rather out of the track of ships, proceeding to, or coming from China, by the eastern passage; but the islands and dangers now to be described, lie near the common route, and are frequently seen.

Geo. site of St. David's Islands.

ST. DAVID'S, or FREEWILL ISLANDS, (the body) in lat. 0° 55′ N., lon. 134° 21½′ E. by mean of 9 ship's chronometers and lunars, nearly corresponding, form a close group,

4 in number, North, South, East, and West Islands, with an islet betwixt North and East Island. They were seen by the Warwick in 1761, by the Swallow in 1769, and recently by several ships. South Island is 3 or 4 miles in length, but it is very narrow in an East and West direction, and they all appear as 1 island in some views. They have a level appearance, are covered with tall cocoa-nut trees, may be seen about 5 leagues from the deck, and although small, are well inhabited. These people seem to subsist chiefly upon fish and cocoa-nuts, and will come off in their canoes, to ships that lay by, near the islands. The Mangles, on the 8th of January, 1806, passed within ½ a mile of the reef, on the East side of them, and found it encircled the group, projecting about a mile from the North and South extremes, but not so far to the East and westward; on the East side of South Island, it projects only about a cable's length, and has no soundings close to. The whole extent of this group is from lat. 0° 49′ N. to lat. 1° 2′ N., and from lon. 134° 17′ to 134° 30′ E.

Captain Tate, of the Cumbrian, made the body of the group in lat. 0° 55′ N., lon. 134° 21½′ E., corresponding with the mean of 9 ship's observations, and he made the easternmost island 3° 10′ E. from the N. E. Yowl Island by chronometer.

HELEN'S SHOAL, in lat. 2° 50′ N., lon. 131° 40¾′ E. or 22¾ miles East of Point Pigot by chronometers, the body or South part, as determined by Captain Seton of the Helen, on the 5th of April, 1794, is probably the same shoal that was seen by Captain Carteret, of H. M. S. Swallow, in 1767. From the Asia's Islands, its southern extremity bears N. by E., distant 36 leagues. Geo. site of Helen's Shoal.

The Ganges, and Canada in company, at midnight on the 10th of September, 1802, got close to the West side of this shoal; and must have inevitably got upon it, had not the moon shone bright at the time. In waring round, the Ganges was within twice her length of the breakers, and the Canada nearly tailed upon them. They stood off until day light, then tacked to the southward with the wind at W. S. W., but finding at 9 A. M. that they could not weather the S. W. extremity of the shoal, they bore away along the West side of it to the N. Eastward, and found it extend about 15 miles nearly N. E. and S. W., and 1 or 2 miles in breadth. It is broadest at the southern part, where it stretches about East and E. N. E. to a considerable distance, then turning more to the northward, forms a curve, with the concave side to the N. Westward, and appears to be steep to. The sea generally breaks high upon this dangerous shoal, which consists of rocks under and above water, none of them elevated more than 4 or 5 feet from the surface. About 4 miles from the northern extremity, there was a dry sand bank, with the appearance of a wreck upon it, when these ships passed; and many pieces of drift wood on the shoal, resembled black rocks. This shoal, was also seen by Captain Hanson, of the Swedish Company's ship Wasa, on his passage to China in 1804, who gave to me a description of it, and made it in lat. 2° 50′ N., lon. 131° 40′ E. by chronometers.*

LORD NORTH'S ISLAND, is in lat. 3° 2¾′ N., lon. 131° 20′ E., by mean of 6 ships lunar observations, but Captain Seton made it 13¾ miles West from Point Pigot by chronometer, which would place it in lon. 131° 4¼ E.: until it was seen by the ship Lord North on the 14th of July, 1782, it seems not to have been known, but it was afterward seen by the Raymond, Asia, and Montrose, on the 1st. of January, 1789; by Captain Seton of the Helen in April, 1794, and it has since been seen by several other ships. It is small, low, and woody, about 1 or 1½ mile in extent E. S. E. and W. N. W., and seems to have a Geo. site of Lord North's Island.

* The Ganges and Canada, made the northern extremity of the shoal in lat. 3° 0′ N. lon. 131° 28½′ E. by ☉☾; the Dorsetshire, on the 5th of February, 1812, saw this shoal, and made it in lat. 2° 53′ N. lon. 131° 52′ E. by lunar observation, the mean of these would give lon. 131° 40¾′ E. for the situation of the shoal; agreeing with Captain Seton's chronometers from Point Pigot.

reef projecting from the East end, but is otherwise apparently safe to approach, and may be seen 4 or 4½ leagues from the deck of a large ship: there is a remarkable tree on the centre of the island, which is first discernible, and makes like a sail. This small island is inhabited, and they have canoes carrying 6 or 8 men, which will sometimes come off to ships passing near.

The Helen's chronometer made it bear W. 15° N. distant 13 leagues from the southern extremity of Helen's Shoal, and it appears to bear about West from the North end of that shoal: this ship's longitude of the island 131° 4¼′ E., is probably nearest the truth; the Dorsetshire, in 1812, made it in lat. 3° 2′ N., lon. 131° 10′ E. by lunar observations.

Geo. site of Meriere.

MERIERE, or MARIERE, is in lat. 4° 19½′ N. lon. 132° 28¼′ E. by mean of 10 ships observations and chronometers, which is probably near the truth, as the Asia's chronometers in 1805, made it also in lon. 132° 28′ E., measured from Canton; and 17 days after, she made Point Pigot in lon. 131° 18′ E., or 70 miles West of Meriere by 2 chronometers agreeing with each other. It was discovered in 1710 by the Spaniards, is about 1½ or 2 miles in extent North and South, and 1 mile or ¾ of a mile in breadth; it is rather higher in the central and southern parts, than at the North end, where there are many cocoanut trees. It may be discerned about 4 or 4½ leagues from the deck, seems to be clear of danger, and has been frequently seen by English ships, on their route to, or from China by the eastern passage. The inhabitants seem to subsist chiefly on fish, and they sometimes come off to ships in their canoes, having nothing to barter except fishing lines.

Geo. site of Current Island.

CURRENT ISLAND, or PULO ANNA, in lat. 4° 38½′ N., lon. 132° 3½′ E. by mean of 10 ships observations and chronometers, bearing from Meriere N. 52° W. distant 10½ leagues, appears to be only about ½ a mile in extent, covered with trees; and although very small, and low, it is well inhabited. It may be seen about 4 leagues from the deck, and a reef is said to project about a mile from its North and South extremities. This small isle, was seen by the Carnarvon, Warwick, and Princes Augusta, returning from China in 1761; and it is now, frequently seen by British ships.

Geo. site of St. Andrew Islands.

ST. ANDREW ISLANDS, in lat. 5° 20′ N., lon. 132° 16′ E. by mean of 8 ships chronometers and observations, or 13 miles East of Current Island by the Asia's chronometers, are 2 in number, bearing from Current Island N. 16° E., distant 14½ leagues;* they are small, low, and level, covered with trees, and may be discerned about 4, or 4½ leagues from the deck. The southernmost, called Codocopuei, is much larger than the other, which is situated about 1½ or 2 miles to the N. N. Eastward, and called Sonrol. They seem to be connected, and surrounded by a reef, which is said to project only to a small distance, and is steep to.

Pellew Islands.

PELLEW, PEELOO, or PALAOS, consisting of a chain of islands of various sizes, completely encircled by reefs, extend nearly N. N. E. and S. S. W. about 29 leagues. The islands are not more than 5 leagues wide in any part, but including the great reef that fronts the western side of the chain at the distance of 4 or 5 leagues, the extreme breadth in the central part is about 10 leagues, converging greatly toward each extremity.

Baubelthouap and adjacent Islands.

BAUBELTHOUAP, forming the N. E. part of the chain, is much larger than any of

* These islands were discovered by the Spaniards in 1710; the Ponsborne saw them in 1769, and made their lat. 5° 22′ N. Lieut. M'Cluer, who resided some years on the Pellew Islands, states, that the inhabitants of St. Andrew Islands, go from thence in their canoes to the former islands.

The St. Johannes Islands, placed formerly in lat. 6° 54′ N. about 2° or 2½° to the westward of the Pellew Islands, appears to have no real existence.

the other islands, being about 8 leagues in length; and on its western side, there is a high hill, from the summit of which, Lieut. M'Cluer saw both the extremities of the chain.

Most of the other islands are rather low, but cultivated, and inhabited. CORROR, situated close to the southward of Baubelthouap, is interspersed with many villages; here, Abba Thulle resided some years ago, whose authority was acknowledged by the inhabitants of the other islands. URUKTHAPEL, is the most considerable island to the southward, and ERAKONG lies close to the southward of it. Fronting the high bluff East point of Urukthapel, there is a large opening in the reef, with anchorage and good soundings, in about lat. 7° 16′ N., having a small channel to the N. W. with 7 and 8 fathoms, through the middle of the reef inside, betwixt that island and Corror. When within the opening of the outer reef, another branch of the channel stretches along the East side of Corror to the N. E. where there is good shelter inside of the reef; and this channel, leads round the East and North sides of Corror, to the western point of the island, with soundings in it from 10 to 25 fathoms. Corror.

ERAKONG HARBOUR, situated on the East side of the island of this name, is sheltered by the outer reef, the entrance to it being in lat. 7° 13′ to 14′ N., through an opening of the reef to the southward of that mentioned above; and having soundings of 7 to 10 fathoms at the entrance, deepening a little inside. Erakong Harbour.

There is another small channel of 8 and 9 fathoms, in lat. 7° 8′ N., leading from the S. E. close round the North side of the first small island to the southward of Erakong. A ship might *probably*, in a case of necessity, with a northerly wind, proceed into Corror, or Erakong Harbour, where she would be well supplied with refreshments by the hospitable inhabitants; but the survey of these islands made in 1793—4, is not sufficiently explicit to afford proper directions for sailing into the harbours, and it would be imprudent to approach them with a S. E. or easterly wind, when the reefs become a lee shore. There is 1 or 2 channels through the great reef on the West side of the islands, navigable for small vessels; but large ships ought not to approach them on this side.

PILLILEW, situated about 3 leagues to the S. W. of Erakong, is a fertile and well cultivated island, about 2½ leagues in length, having a range of small isles stretching to the North, and to the N. E. betwixt it and Erakong. Pillilew.

The great reef is dry in many places at low water, and begins at the S. W. point of Pillilew, extending nearly North about 12 leagues, and then converges to the N. E., toward the northern extremity of the islands. On the eastern side of the chain, the reef seldom projects above 4 or 5 miles from the shore.

ANGOUR, the S. Westernmost Island, is low, about 3 or 4 miles in length N. E. and S.W., having apparently a safe channel about 4 miles wide, betwixt it and the South point of Pillilew; but these islands are steep to, without soundings. Lieut. M'Cluer, places a rocky bank of 10 fathoms, about 1½ mile West from the S. W. point of Angour. The Mangles passed within 3 miles of it in 1806, and observed a reef projecting about ½ a mile from the low sandy point. In the same year, the Anna returning from China, made a tack or two with a westerly wind to weather the point; and in passing it at the distance of 1 mile, no reef could be perceived, although the surf was beating high against the shore. Angour, or S.W. Island.

When a ship is 3 or 4 miles off the West side of Angour, with an easterly wind, a N. by E. course will carry her clear off the western verge of the great reef, if there be no lateral current. Amongst the islands, there are regular tides setting East and West, except when strong winds counteract them, and produce a current; the rise of the tide is from 6 to 8 feet at full and change of the moon. To sail from it to the northward.

The S.W. end of Angour, or southern limit of the Pellew Islands, is in lat. 6° 53½′ N., lon. 134° 21′ E. by mean of 11 ships observations and chronometers.

Geo. site of the Pellew Islands.

The East point of the large Island Baubelthouap, forming the eastern limit of the chain, is in lat. 7° 41′ N., lon. 134° 55′ E. The northern limit, consists of a group of 4 small low isles, about 6 leagues distant from the North end of Baubelthouap; and KYANGLE, the northernmost and largest of these isles, is in lat. 8° 8½′ N., lon. 134° 50′ E. by lunar observations, corresponding with its relative position from the S. W. extremity of the chain, as shewn by Lieut. M'Cleur's Survey.

The N. Westernmost danger, is a large reef partly dry, in lat. 8° 18′ N., distant about 4 leagues to the N. W. of Kyangle. The Kyangle Group is surrounded by a reef, betwixt which and Kossall, which is a large dry reef to the southward, there is a channel about 2 miles wide, with irregular soundings of 40 to 10 fathoms, over the coral bank. Betwixt the South end of Kossoll Reef, and that projecting from the North end of Baubelthouap, there is another channel in lat. 7° 56′ N., with irregular soundings on the coral bank, from 10 to 30 fathoms; and a patch of high breakers on the western edge of the bank, about 2 leagues to the westward of Kossoll. It would not, however, be prudent to proceed through any of these channels in a large ship, until they are better examined.

Islands Matelotas.

MATELOTAS, are the westernmost of the extensive chain of islands called Carolina's, which stretch nearly East through the middle of the Pacific Ocean, chiefly betwixt the parallels of lat. 7° to 10° N. These islands bear from the northern extremity of the Pellew Chain E. 4° N., distant about 58 leagues, and are sometimes seen by ships which keep far to the eastward on their passage to China.

They are small, low, covered with trees, and the inhabitants come off in their canoes at times, to ships passing near, bringing with them cocoanuts, smoked fish, and pieces of cloth of their own manufacture. The southernmost island, seems safe to approach on the South side: but dangerous shoals stretch from it in a northerly and N. W. direction around the other islands, also betwixt it and the 2 northern islands, which are connected and surrounded by reefs. With the wind at S. Eastward, Captain Moring, in the Duckingfield-Hall, got close to the East side of these Islands, in the night of the 22d of January, 1798, and had soundings from 20 to 35 fathoms coral rock. She made 1 or 2 tacks before day-light, mostly in soundings of 20 to 30 fathoms, but could not clear the islands, because the tide or current set strong to the westward. At 7 A. M. it turned, and set to the eastward with strong ripplings; shortly after, when the southern island bore S. 10° W., and the 2 northern islands bore N. 10° E., and W. by S. ½ S., the depth decreased suddenly to 11, next cast to 5 fathoms. She then tacked to the N. N. E. and immediately deepened; afterward, passed over 2 small patches of 5 fathoms, and rounded the southernmost island at ½ past 11 A. M. At noon, observed lat. 8° 15½′ N., lon. 137° 44′ E. by chronometer, the southernmost island bearing North, distant about 4 miles, the other islands N. N. W. and N. 31° W.

The 2 northern islands bear N. E. ¾ E. and S. W. ¾ W. of each other, and are very dangerous to approach in the night; for a coral reef projects about 2 leagues to the northward of the N. E. island, with high breakers on it in some places. The Washington, American ship, passed on the East side of this reef and the islands, on the 23d of November, 1804, with a strong westerly wind.

The Althea, bound from China to Bengal, passed also to the eastward of these islands on the 20th of July, 1806, having been carried thus far to the eastward by S. W. winds and and easterly currents: but if the wind permit, it is best to pass to the westward of them.

Geo. site.

By mean of the observations of these ships, and their chronometers, the southernmost island is in lat. 8° 21′ N., lon. 137° 44½′ E., and the N. Easternmost island in lat. 8° 34½′ N., lon. 137° 44¾′ E. Admiral Rainier, in H. M. S. Suffolk, passed near these islands on the 15th of December, 1796, and made the southernmost island in lat. 8° 17′ N., lon. 137° 34′ E.

and the N. Easternmost island in lat. 8° 35′ N., lon. 137° 40′ E., by many lunar observations corresponding within 1 mile of 2 chronometers.

YAP, or UNAWB, bearing from the Matelotas Islands N. 19° E. distant 21 leagues, is the westernmost *large* island of the Carolina Archipelago. Several ships have fallen in with it, when proceeding by the eastern passage to China, although it is situated to the eastward of the common track. Yap.

The south end of this island is very low, rising gradually into hills to the northward, and in many parts, it is luxuriant, abounding with cocoanut trees, but not covered with wood. When first seen, the hills give it the appearance of 2 or 3 islands; and on a near approach, it seems to consist of a group of islands contiguous to each other, the whole encompassed by a chain of black rocks. The reef lining the South and western parts, is very dangerous to approach in the night, for it extends in a W. S. W. direction from the S. W. end of the island about 2 leagues distance, is steep to, and very narrow toward its extremity, with some of the tops of the black rocks upon it, just appearing above water.

The Exeter, with the Hawke, and Henry Dundas in company, on the 15th of December, 1793, saw a fire a-head at 5 A. M. and instantly tacked to the southward. Shortly after, at day-light, the Island Yap bore from North to N. E. distant 4 or 5 miles, and breakers on the reef N. W. by N. about 3 or 4 miles. The wind being westerly, with squalls and rain, they were employed during this and the following day, working round to the westward of the island, which they cleared on the 16th at noon. The Swallow Packet, passed near this island on the 18th of March, 1801, and the people which came off in canoes, frequently pronounced the word yap. The Halcyon, and Venus, American vessels, bound to Kamschatka, and to the N. W. coast of America, saw the Island Yap bearing North at 4 A. M. on the 16th of May, 1792. At day-light, they steered along the S. W. side of the island within a ¼ and ½ mile of the reef, then hove to, for many canoes that were coming off; some of which had 15 or 16 men in them, and were exactly similar to the Flying Proa of the Marian Islands. The chief articles brought off by these people, were cocoanuts, hooks, and fishing-lines, some flying fish, tarro, pieces of mat-cloth, and spears. They were in every respect like the natives of the Pellew Islands, stout and regularly formed, and seemed to understand the Pellew Vocabulary.

The island has a pleasing aspect, being interspersed with many houses, well constructed, in the same manner as those of the Pellew Islands; and there seems to be a large village to the S. Eastward of the reef. By mean of the observations of 6 ships by ☉ ☽ and chronometer, the South end of the island is in lat. 9° 30½′ N., lon. 138° 8′ E., their longitude corresponding within 2 miles of each other; and its northern extremity is in lat. 9° 40′ N. Geo. site.

By these observations, the body of the island seems to be in lat. 9° 35½′ N., lon. 138° 8′ East, extending nearly North and South about 3½ leagues. Some observations of ☉ ☽ taken in the Hawke, made it 6½ leagues more to the westward; but those of that correct navigator, Captain Lestock Wilson of the Exeter, exactly corresponding with others taken in the Swallow, are probably nearest the truth.

The islands seen by Captain John Hunter, on the 17th of July, 1791, returning from Port Jackson, in the Waezamheydt, were probably no other than Yap, which he places from lat. 9° 31′ to 9° 37′ N., lon. 137° 32′ E.; but as he passed them at the distance of 7 leagues to the eastward, his longitude may be liable to error; particularly as it is uncertain, whether or not he got any observations at the time. About 7 leagues N. by E. a little easterly from the islands, the Waezamheydt passed over a narrow coral spit extending nearly North and South, on which she had 16 fathoms water, and saw the rocks under the bottom, at that time being in lat. 9° 57½′ N. Islands seen by Captain Hunter. Coral Bank to the northward.

MARIAN, or MARIANES ISLANDS, called also Ladrone Islands, are situated to Marian Islands.

the northward of the Carolina Archipelago, and belong to the Spaniards; they extend in a N. N. E. direction forming a chain, nearly from lat. 13° to 21° N.; having good channels between some of them. GUAHAN, or GUAM, the southernmost and largest of these islands, is about 12 leagues in length N. E. and S. W, having the Port of Apra on the West side, formed betwixt a peninsula and a large reef that fronts it to the northward. Umatac Bay, at the S. W. part of the island, also affords shelter with the wind between N. and S. E., the anchorage being in 10 to 15 fathoms sand, off the mouth of the harbour, with the fort bearing about N. E. by E., distant ¼ or ½ a mile. This bay was surveyed by Admiral Malespina, who made the fort in lat. 13° 21½′ N., lon. 144° 19¾′ E. of Greenwich, by astronomical observations. The town is of considerable size, and the Galleons touch here for refreshments, on their passage from Acapulco toward Manilla. This island is moderately elevated, lined by reefs to the southward, with the shoal of Antury about 3 or 4 leagues off its North end.

Guam.

Geo. site of Umatac Bay.

SAYPAN and TENIAN, situated near each other, betwixt lat. 15° and 15½° N., the latter being in lat. 15° 0′ N., lon. 145° 47′ E., are of middling height; and there is a peak on Saypan, which is the northernmost of these 2 islands. They have anchorage on their West sides; that of Tenian is in 20 to 35 fathoms, in a small bay near the South end of the island, but the bottom is rather foul, and the shore fronted by reefs. The West side of Saypan is also lined by a reef, and the Spanish plans, have a reef projecting from the N. W. part of the island to the S. W. and southward, until opposite to the North end of Tenian. Betwixt the N. W. end of this island and the reef, there is a good channel, with soundings of various depths within the reef, and anchorage near the western shore of Saypan. These islands, abound with limes, lemons, some cattle; and there is said to be plenty of wild hogs on Saypan, which articles are very renovating to the scorbutic crews of ships that touch here. English ships, sometimes stop at these islands, on their passage from New South Wales toward Canton; although fresh water may be got in Tenian Bay, Saypan seems to be a better island for refreshments, affording also safer anchorage than the former. Bird Island, in lat. 16° 47′ N., lon. 146° 13′ E., is the next island to the northward of Saypan, there being a safe channel 28 leagues wide between them. Anatajan lies 7 leagues to the N. Eastward of Bird Island, from whence the northern part of the Marian chain of islands are situated near each other, and extend about N. by W. to the Islet Pajaros, in lat. 20° 34′ N., lon. 145° 48′ E.

Geo. site of Saypan and Tenian.

Geo. site of other islands.

ASSUMPTION ISLAND, in lat. 19° 45′ N., lon. 145° 35′ E., is about 3 or 4 miles in length, of moderate height, with cocoanut trees on the West side, where a ship may anchor in 30 fathoms black sand, about ½ a mile off shore; but the landing is difficult, and no fresh water procurable for the supply of ships.

Geo. site of Assumption and other islands.

The 3 rocky isles called MANGS, bear about N. W. by N. distant 5 leagues from Assumption; and URACAS the northernmost of these islands, is situated a little farther to the northward in about lat. 20° 20′ N. This group of islands, is sometimes considered as part of those which go by the name of Marian Islands, as they are a continuation of the chain. The Island Alamagan is in about lat. 18° 5′ N., and forms 1 of the chain, and other islands intervene between some of those mentioned above.

SULPHUR ISLAND, in lat. 24° 48′ N., lon. 141° 20′ E., is small, with steep perpendicular cliffs fronting the sea, rising in a high peak at the summit, which may be seen 12 leagues off. It is covered with shrubs and long grass, having a rock close to its West end, and a reef projecting about ½ a mile from the N. E. end, with 10 fathoms water within a cable's length of the shore, and 30 fathoms rocky bottom at the distance of ½ a mile.

Geo. site of Sulphur Island.

This remarkable rock, stands by itself in the middle of the ocean, but other small islands

are situated several degrees to the eastward, and others to the northward of it, the situations of which are not correctly known. There is said to be 1 or 2 dangers in the space betwixt Sulphur Island and the Marian Islands; and from thence, westward to the Bashee Islands, there appears to be a reef in lat. 20° 32′ N., lon. 136° 12′ E., seen by Captain Douglas in 1789, which perhaps may be the same seen by Captain Bishop in 1796, about 14 leagues farther to the E. S. Eastward.

Geo. site of Abregoes Shoal.

ABREGOES SHOAL, in lat. 20° 59′ N., lon. 136° 38′ E., is said to be a dangerous reef, seen by Captain Mears on his returning passage from the N. W. coast of America, but its real situation has not been satisfactorily ascertained, and it possibly may be 1 of those mentioned above. Captain Bishop, saw also a rock in lat. 25° 22′ N., lon. 132° 0′ E., and Captain Kendrick discovered a low island in lat. 24° 30′ N., lon. 133° 36′ E., about 2 leagues in extent.

Geo. site of Kendrick's Island.

Directions for sailing from Dampier's Strait toward China.

THE PACIFIC OCEAN being entered, conformably to the instructions given at the beginning of this section, for ships proceeding out of Dampier's Strait, every advantage ought to be afterward embraced, to get sufficient easting whilst in a low latitude. The best track to effect this, is betwixt the parallels of lat. 1° 30′ and 3° N., where a S. Easterly current will in general be experienced in December and January, which has already been described, in the directions for sailing out by the Gillolo Passage.

The proper quantity of easting to be made, must depend principally upon the judgment of the navigator, according to prevailing circumstances; but as a general rule, it seems necessary to get into about lon. 136° E. before the parallel of lat. 3° or 3½′ N. are crossed, if it be intended to pass to the eastward of the Pellew Islands. In ships which sail indifferently, or are in any way disabled, it is advisable to make sufficient easting with the variable winds in a low latitude, to be enabled to pass to the eastward of the Pellew Islands, during the strength of the N. E. monsoon; but they ought not to run so far East, as to fall in with the Matelotas Islands, because spurts of westerly winds, have sometimes been experienced there, both in November and December.

Ships which sail well, should make the southernmost extremity of the Pellew Islands, and proceed along their western sides, or pass within a moderate distance of them; which will generally be sufficient to enable them to weather the North end of Luconia, at any period of the N. E. monsoon. But as the current in this season sets mostly to the westward, from 10 to 15 miles daily, in the track betwixt the Pellews and Bashee Islands, with strong N. E. winds and a heavy sea, in December, January, and part of February, ships that pass to the eastward of the Pellew Islands will be more to windward, and probably reach the Bashee Islands with greater facility, than others which pass to the westward of the Pellew Chain.

In this track, the sea commonly rises, prior to a strong gale at N. E.; but Ty-foongs, which are liable to happen near the Head of Luconia, and Formosa, give little or no warning of their approach, except by the fall of the mercury in a marine barometer, which is the best indicator of these storms; it is, therefore, prudent for ships passing between the Pellew Islands and the coast of China, to be always in a proper state to encounter severe weather. From December to May, storms are seldom experienced; but in October, November, and December, also in June and July, many ships have been dismasted in the vicinity of the Babuyan, or Bashee Islands; and some have foundered with their crews, to the eastward of Luconia. If a ship should happen to be disabled to the eastward of this island, and unable to weather its northern extremity, she may pass to the westward through the Embocadero and strait of Manilla, then proceed along the West coast of Luconia to the northward as far as Cape Bajadore.

If proceeding from Dampier's Strait late in the season, you have no occasion to make so much easting as at an earlier period: late in February, and in March, you may pass to the

westward of the Pellew Islands with safety, the violence of the N. E. monsoon being then on the decline, and the winds generally veer to E. N. Eastward. Having reached the latitude of the North end of Luconia, you may pass through the channel between the Babuyans and Bashee Islands, or through any of the safe channels amongst these islands, as circumstances require. But if early in the season, and the wind hang at N. Eastward, you may pass round to the northward of the Bashee Islands, on either side of the supposed Cumbrian's Reef, then haul up near the South end of Formosa, betwixt it and the Vele Rete Rocks, when the weather is settled, in the day time. By adopting this track, you will be well to windward on opening the West side of Formosa, where the winds frequently draw through from the northward, between it and the coast of China; whilst they are prevailing from the N. Eastward outside of the islands. During the night, or with unfavorable weather, when this track cannot be pursued with safety, it will be prudent to give a good birth to the Cumbrian's Reef and Vele Rete Rocks, by borrowing toward the North Bashee Islands. And by whatever channel, you may have passed from the Pacific Ocean into the China Sea, endeavour to fall in with Pedro Branco, or the coast of China near it, attending to the lead in the night, and then proceed through the Lema Channel, into the entrance of Canton River.

The light northerly, and baffling airs, with constant S. E. or southerly currents, which are generally experienced after leaving Dampier's Strait, render the progress to the eastward very slow; and afterward, it is frequently tedious getting to the northward as far as the Pellew Islands, because light N. E. winds and a southerly swell, prevail greatly about the southern limit of the N. E. monsoon. When the latitude of the southernmost of the Pellew Islands is approached, the N. E. winds generally set in steady, and the current changes and sets to the westward; but sometimes, the regular N. E. monsoon is not experienced until clear to the northward of those islands. Whilst making easting in a low latitude, a good look out is requisite, because there *probably may exist*, some undiscovered dangers.*

## *DIRECTIONS for SAILING from CHINA, outside of the PHILLIPINE ISLANDS, and through the PITT'S PASSAGE, into the OCEAN.*

Remarks relative to sailing from China, in the S. W. monsoon.

THE DIRECT PASSAGE, from China to Malacca Strait, may sometimes be performed by a fast sailing ship, against the S. W. monsoon; but it probably should not be attempted unless under particular circumstances, and only in ships bound to Bengal, or to the eastern side of that bay; for vessels are liable to strain, and injure their sails and rigging greatly, in beating down the China Sea, and they may in general expect to experience a tedious passage.

Ships departing from China, late in April or in May, have frequently adopted the route on the West side of the Philippine Islands, particularly when easterly winds prevailed at the time of their departure, because these winds were unfavorable for passing out into the ocean, between Formosa and Luconia; nevertheless, the Outer Passage seems preferable after the middle of May, being more certain than the other, and ought to be pursued by ships bound to Europe, or to the western part of Hindoostan; particularly, if they do not sail well, when close hauled to the wind.

* The Minerva fell in with an immense quantity of rock-weed, bamboos, and pieces of wood, in lat. 2° 30' N. lon. 135° E., which they thought, might have been drifted from some shoal or small isle, in that neighbourhood.

Departing from Canton River, late in May, June, or July, a ship ought to proceed by the outer track, to the eastward of the Philippine Islands, and through the Pitt's Passage; where she will probably meet with less embarrassment than by any other route, and may generally expect better winds, and more settled weather. August is rather late for returning by an eastern passage, a ship leaving Canton River at this time, may adopt the route along the coast of Cochin-china and Cambodia; but unless she be a fast sailer, it will be better not to depart before September, for little advantage can accrue from sailing so early.* To proceed by the Eastern Passage;

If the wind is at South or S. Westward, and the route on the East side of the Philippine Islands to be followed, a ship ought to go out through the Lema Channel, then haul well to the southward, in order to lead out into the Pacific Ocean without tacking; because, the wind frequently veers to S. E., with strong northerly currents adjacent to the islands situated between Formosa and Luconia.

The channel betwixt the Babuyan and Bashee Islands, should be adopted if the wind permit, because it is clear of hidden danger, and farther to windward than the North channel between Formosa and the Bashees; besides, the latter is rendered unpleasant during thick weather, or in the night, by the Vele Rete Rocks, and the supposed Cumbrian's Reef.

HAVING entered the PACIFIC OCEAN, the winds will in general be found variable, chiefly at S. Westward, and a current setting to the N. E. or eastward at times, about 8 or 10 miles per day. An S. Easterly course should be steered, to get a good offing from Cape Engano and the coast of Luconia, for the wind draws from South and S. Eastward in the vicinity of that coast, with a strong current setting along it to the northward in this season, whereby several ships keeping near the land in June and July, have greatly prolonged their passage. Care is also requisite, not to get too far to the eastward, by tacking occasionally with the favorable shifts of wind, in order to keep in the fair track. Some ships have been carried by the S. S. W. winds, as far out as the Matelotas Islands, but you ought not to pass outside of the Pellew Islands if it can be avoided. through the Pacific Ocean.

In proceeding to the southward, the *fair* track is, to steer for the St. Andrew Islands, and pass to the eastward of these, Current Island, Meriere, Lord North's Island, and the Helen's Shoal. If an easterly current is experienced, it will generally be weak, until the parallel of the South end of the Pellew Islands is approached; but in lat. 6° or 5° N., a strong set to the eastward may be expected in June, July, and August; which from lat. 5° to 2° N., forms a belt, often running at the rate of 30, to 60 miles in 24 hours. Strong westerly winds sometimes carry ships speedily across this *belt of current;* but light baffling airs often predominate, and then they are liable to be set greatly to the eastward, frequently to lon. 138° E., and the Althea was set into lon. 141° E., when in lat. 4° N. To prevent loss of time, it is prudent to steer a direct course to the S. S. W. or southward, across this current, on purpose to get clear of it speedily; for in lat. 2° to 1° N., the easterly current will be succeeded by a westerly set, which in this season generally prevails near the equator.

This current sets West and W. N. W., from 15 to 30, and sometimes 40 miles in 24 hours, adjacent to the coast of New Guinea, and near the North side of Waygeeooe; but close into the entrance of Dampier's Strait, there is a tide or current frequently running out to the eastward.

Having passed to the eastward of St. Andrew Islands, steer to the southward, keeping in lon. 132½° to 133° E., if the wind permit; and having reached lat. 1° N., a direct course toward Point Pigot will be proper, or rather to make the coast of New Guinea a little to the eastward of that point, if the passage through Dampier's Strait is to be chosen. It is, however, prudent, not to make the coast of New Guinea far from the entrance of the strait, Toward Dampier's Strait,

* Particular information, relative to sailing from China at all times of the year, will be found under the title, "China Sea," in the 2d Section; where instructions have been given for sailing through that sea.

unless the wind prevail steady from eastward; because ships are sometimes retarded by westerly breezes, and a current running out betwixt Point Pigot and New Guinea.

Through the Gillolo Passage,

THE GILLOLO PASSAGE, is preferred to Dampier's Strait by several navigators, being wide and clear of danger; for there is seldom any difficulty in getting through it, into the Pitt's Passage, the winds being often variable; and when they prevail from the southward, a drain of current is frequently found to run through against the wind. If you adopt this passage, steer from lat. 2° N., nearly direct for the Asia's Islands, passing to the northward of them if the wind permit; or otherwise, betwixt them and the Yowl Islands. You may proceed into the Gillolo Passage, on either side of Geby, after passing the outermost islands, Eye and Syang; but during unsettled weather, the channel on the West side of Geby ought to be adopted, being wider than those to the eastward. In proceeding southward through the Gillolo Passage, it is prudent to keep well to the eastward, in case of meeting with a westerly current off the South end of Gillolo; and the Pitt's Passage may be entered by the wide channel formed between Pulo Pisang and the Boo Islands, or by that formed betwixt Kekik and Pulo Gasses, as circumstances require.

and through Dampier's Strait.

IF DAMPIER'S STRAIT be chosen, round Point Pigot at 2, 3, or 4 leagues distance, as may be convenient according to the prevailing wind, then steer about W. $\frac{1}{2}$ S. and W. by S. for King William's Island, keeping it bearing about West or W. $\frac{1}{4}$ S. There is no danger in passing betwixt Point Pigot and New Guinea in the night; and the distance from that point being about 12 leagues to the narrow part of the strait, ships which pass round Point Pigot in the night, have the chance of getting through the narrowest part of the strait on the following day, probably without being obliged to anchor, if the wind or tide be favorable. Steering from Point Pigot to the westward in the night, take care not to get to the southward near Battanta Shoal, nor too near the coast of Waygeeooe, for the tides run sometimes strong and irregular. When the night is clear, this coast will be visible, and answer as a guide: if you run so far into the strait as to see King William's Island bearing about West, you will be in the fair track, and when within 3 leagues of it, steer about S. W. by W. for Pigeon Island; but unless acquainted, and the night be very favorable, it would be imprudent to approach the East end of King William's Island nearer than 3 or 4 leagues, until day-light. If a ship be drifted to the southward, into soundings near the shoal off the East end of Battanta, she ought instantly to bring up with a light anchor, to wait for day-light; and this will also be necessary, if she get upon the bank of anchorage, to the eastward of Pigeon Island.

In day-light, steering from Point Pigot to the westward, Mansfield Island and the other low island near it, will be seen bearing to the S. Westward, and Foul Island will be discerned soon after. These islands and the edge of Vansittart's Shoal, must have a good birth, by keeping King William's Island about West, and steering toward Pigeon Island bearing about W. by S. or W. by S. $\frac{1}{2}$ S., after it is discerned. This island may be passed on the South side, at 2 or 3 miles distance, and after Augusta Island is brought to bear North or N. by E., you ought to keep within 3 leagues of the Battanta Shore, in proceeding to the S. Westward, to avoid the shoal patches bordering the North side of the channel, to the S. W. and westward of Augusta Island; observing, not to bring Pigeon Island to the eastward of E. N. E., nor Augusta Island to the eastward of E. N. E. $\frac{1}{2}$ N. while they are visible.

To sail from Dampier's Strait, through the Pitt's Passage;

Departing from Dampier's Strait, work close round the western part of Battanta to Cape Mabo, prior to stretching over for Pulo Popa, if you intend to pass on the South side of that island; because, with a S. S. Easterly wind and N. W. current, which frequently prevail between them, ships are liable to fall to leeward in crossing. When any difficulty appears in weathering Pulo Popa, no time ought to be lost, for the passage along the North side of it and the contiguous isles, is safe, and should be immediately adopted: you may pass within

2 or 3 miles of the North side of Pulo Popa, and the isles that project from its West end, then haul to the S.W. into the Pitt's Passage, betwixt them and the Boo Islands.

Having entered the Pitt's Passage, the mid-channel track may be preserved, inclining a little toward the islands which bound it on the South side, in order to counteract any current that may sometimes be setting to the northward. But the currents in the Pitt's Passage, during the S. E. monsoon, are changeable, although generally they run to the westward about 10 to 25 miles daily. The winds also, vary frequently all round the compass, betwixt the large islands which form this passage, by which ships are enabled to proceed either to the northward or southward, commonly during both monsoons.

When a ship has steered from Pulo Popa to the westward, and reached the opening betwen Ceram and Bouro, she may proceed into the ocean by the Ombay Passage, or by some of the straits farther to the westward, as circumstances render expedient.

and from thence through the Ombay Passage;

OMBAY PASSAGE, may be pursued during the S. E. monsoon, for the wind prevailing mostly between East and E. S. E. in the Banda Sea, will enable ships which pass betwixt Manipa and the East end of Bouro, to weather Ombay. Sometimes, a strong southerly wind blows through the gut between Manipa and Bouro, but there is seldom any lee current. Should difficulty be apprehended in getting through between them, you may round the West end of Bouro, then haul close to the wind; and even from hence, you will *generally* be able to pass to the eastward of Ombay: but a good look out must be kept for St. Matthew's and Velthoen's Islands, because at times there is a strong westerly current. The route into the ocean by the Ombay Passage, has already been mentioned in the sequel of 1 of the preceding sections, where directions are given for sailing from China to the westward of the Philippine Islands, and through the Molucca Passage. Ships from Amboina, steering for the Ombay Passage, ought to be careful not to haul too much to the eastward, on account of the Turtle and Lucepara Isles, which are dangerous to approach in the night. If a ship proceeding through the passage, be in want of water or provisions, she will procure supplies, by touching at Dilly, or Batto-Gady, on the North coast of Timor; or at Copang Bay, situated at the West end of that island.

Although the Ombay Passage is the quickest route from the Pitt's Passage into the open sea, it is not so much frequented as the track by Salayer Straits, and from thence through the straits of Allass or Sapy.

Or to the westward through the Straits of Salayer.

If this route be followed, steer from the N. W. part of Bouro about S. W. for the northernmost Token Besseys Island, which bears S. 48° W. from the N. W. end of Bouro, distant 64 leagues. If the wind blow strong from S. E., and a northwest current be apprehended, steer S. W. ½ S. from abreast of the N. W. end of Bouro, to prevent falling to leeward in crossing; taking care not to borrow near St. Matthew's Islands, nor to the eastern side of the Token Besseys, during the night.

When it can be conveniently done, a ship ought to fall in with the northernmost island of the Token Besseys in day light, for some ships by steering wide of it in the night, have got close to the N. E. part of Bouton; and after some delay, working against a strong S. E. wind and northerly current, were obliged to bear away, and proceeded through the strait of Bouton. To make certain, therefore, of weathering the South end of Bouton, round the northern Token Besseys Island within the distance of 2 or 3 miles, it being steep to, on the North and West sides, no danger appearing to extend from it above a mile. Having rounded this island within the distance of a league, you will be enabled to pass round the South end of Bouton with a leading wind; from thence, steer about W. ½ N. for Middle Island in the straits of Salayer, taking care to give a birth to the island Cambyna, when passing it in the night. If the North end of Salayer and the adjacent islands are plainly discerned before dark, a person well acquainted, might run through betwixt Middle Island and South Island, when the night is clear; but it would be imprudent for a stranger to run into these

straits in the night, for he might be liable to miss the proper channel, by mistaking one island for another.

To sail from Salayer Straits, to ward Bengal;

From Salayer Straits, if bound to Bengal in the southerly monsoon, steer westward, on either side of the Brill Shoal as most convenient, then so as to pass near the Great Solombo; from hence, steer to give a proper birth to the shoals off Pulo Mancap, and proceed through the Carimata Passage. From hence steer for the North end of Banca, and through the straits of Durion, or for the strait of Sincapour, as seems most eligible. The passage into Malacca Strait will be speedy by either of these routes, and the latter may be chosen by persons unacquainted, observing to fall in with Pulo Panjang, giving a birth to the Dogger Banks, and passing close round the North side of Bintang, betwixt it and Pedro Branco. By following this route from Salayer Straits, and through Malacca Strait, a quick passage may be expected to Bengal.

Or to Batavia;

If you intend to touch at Batavia, steer from the Great Solombo, along the North coast of Java, either to the northward or southward of Lubeck and Carimon Java, as expedient; but the strongest breezes will be experienced outside of these islands. After leaving Batavia, the route into the open sea, through Sunda Strait, ought to be adopted, whether ships are bound to Europe, to the western side of Hindoostan, or Bengal; unless those going to the latter place, intend to stop in the strait of Malacca, and in such case, they should pass through the straits of Banca and Durion.

To Sapy, and Allass Straits.

SAPY STRAIT, or ALLASS STRAIT, is mostly chosen, when ships bound to the western parts of Hindoostan or to Europe, have adopted the passage through the straits of Salayer. If you intend to proceed into the open sea by the strait of Sapy, after passing along the West side of Salayer and Hog Island, haul up well to the southward, in order to counteract a westerly current, which may be expected in crossing: endeavour to fall in with the North end of Comodo, then steer for the western channel betwixt Gilibanta and Goonong-Apee, if in want of water or refreshments; for the eastern channel betwixt Gilibanta and Comodo, is little frequented, although it appears to be safe, and is the most direct, when passing to the southward in the S.E. monsoon.

Geo. site of Mamalakjee, the N.W. Schiedam Island.

In steering from the West side of Salayer to the southward, give a birth to the outermost of the TONIN ISLANDS, of which, Mamalakjee the westernmost, is situated in lat. 6° 41′ S., lon. 120° 14′ E. The N. W. Schiedam Island, in lat. 7° 1′ S., lon. 120° 28′ E., is the S.Westernmost of this group of islands, which extend southward from Salayer, and it has a dangerous reef projecting a great way to the W. S. Westward from its S. W. extremity.

Geo. site of Easternmost Postillions.

Ships steering from Salayer Straits, toward the strait of Allas, have no occasion to borrow near these islands, but they must steer a proper course to avoid the easternmost group of the POSTILLIONS, which bounds the West side of the passage. The S. Easternmost group of these islands, appears to consist of 6 or 8 low woody islands, the largest in the centre, which extend from lat. 6° 45′ S., lon. 119° 15′ E. to lat. 6° 55′ S. lon. 119° 5′ E., measured by chronometer from Bally Town in the strait of Allass. As these islands are thought to be fronted, and connected by dangerous reefs, they ought not to be approached close, particularly during the night.

Geo. site of Selonda Island.

Having passed the latitude of this group, steer to make Selonda Island, situated in lat. 8° 8′ S., lon. 117° 44′ E. by chronometers; which being moderately high, and flat on the summit, may be discerned when the adjoining land of Sumbawa is obscured by haze. It is small, distant about 1 or 1½ league from the Sumbawa Shore, and 2 or 3 leagues to the eastward of Pulo Majo. A current will generally be found in this part, setting from 15 to 30 miles daily to the westward in the S. E. monsoon; and frequently much stronger to the eastward, during the opposite monsoon.

PULO MAJO, or MAYO, fronting the large bay or gulf on the North coast of Sumbawa, its North point is in lat. 8° 7′ S., lon. 117° 31′ E., and it is pretty high, about 4 leagues in extent; the coast of Sumbawa to the eastward of it, is in about lat. 8° 10′ S. When abreast of Pulo Majo about 9 or 10 miles distance, a course W. by S. ½ S. will just carry you clear outside of Flat Island, which lies in lat. 8° 9′ S., lon. 117° 25′ E., bearing about W. by N. from the West end of Pulo Majo. Great care is requisite when passing here in the night, for several ships have nearly got upon Flat Island before it was perceived; and it must not be rounded at a great distance, on account of the SANDBUY'S SHOALS, which are 2 dangerous sand banks, with rocks and coral shoals projecting from them, on which the Alexander struck, and was nearly lost in 1806, when steering from Lombock Strait to the eastward. These banks are in lat. 7° 42′ to 7° 45′ S., lon. 117° 25′ to 117° 29′ E. by chronometers from Bally Town. The Minerva and Ardassier, steering out of the strait of Allass, made these banks at day light, on the 9th of January, 1809, bearing N. E. by E., and E. N. E., in the direct course they were steering.

Pulo Majo.

Geo. site of Flat Island.

Geo. site of Sanbuy's Shoals.

Captain William Greig, passed in the Minto, to the northward of these shoals, between them and the southern islands of the Paternosters, and saw 1 of them, which was a narrow sand extending East and West about 3 or 4 miles. When 2½ miles to the northward of it, Lombock Peak bore S. W. ½ S., and Tumbora Mountain, or Mount Aron on Sumbawa S. E. ¾ E., which places the sand bank in lat. 7° 43′ S. lon. 117° 19½′ E., by its bearing from Lombock Peak, or in lon. 117° 13½′ E. by its bearing from Mount Aron.

The Dutch Frigate, Maria Reygersbergen, on the 1st. of April, 1805, with 15 sail of ships under her convoy, at 8 A. M. saw a sand bank about 2 or 3 feet above water, bearing N. ½ W. about 2 miles distant, at the same time Lombock Peak bore S. 58° W., a high mountain, on Sumbawa E. by S., the North point of Pulo Majo S. 59° E. centre of Flat Island S. E. ½ S., the eastern of the high mountains on the S. W. part of Sumbawa S. ½ E., off Pulo Majo 4½ or 5 leagues. And she made this sand bank in lat. 7° 56′ S., lon. 117° 15½ E. by chronometers from Batavia.

Exclusive of these dangers mentioned above, there appear to be 2 other sand banks farther to the eastward, seen by H. M. S. Baracouta on the 19th of September, 1810; she was running at the rate of 8 knots, and saw a sand bank bearing W. by N., which she made in lat. 7° 52½′ S., lon. 118° 3′ E., and shortly after saw another sand bank in lat. 7° 54′ S., lon. 118° 0′ E., so that, if the Baracouta's statement is correct, there exist 4 different sand banks between lat. 7° 42′ S. and 7° 56′ S., lon. 117° 13′ E., to 118° 3′ E.

There is a passage betwixt the West end of Pulo Majo and Flat Island, but ships always pass outside of them.

When abreast of Flat Island, steer S. W. by W. for the entrance of Allass Strait, preserving a moderate distance from the range of low islands that lines the N. W. part of Sumbawa, which is steep to, until within ⅔ds. of a cable's length of the reef that skirts some of them; soundings are then got of 60 or 50 fathoms. You may steer along these islands in the night if the weather is clear, but after running about 40 or 45 miles S. W. by W. from Flat Island, the narrow part of the strait will be approached, which is only 5 or 6 miles wide. The small rocky islands adjacent to the Lombock shore, which bound the West side of the channel, ought to be avoided in the night, for reefs project from them on the South and East sides. It would therefore, be imprudent, to pass through this narrow part of the strait during the night, unless certain of your situation, with clear weather, for the tides or currents might drift you near the reefs. Close to these rocky isles and reefs, there are soundings, where you may anchor in case of necessity; and there is a good channel near a league wide, betwixt them and the Lombock Shore, with regular soundings of 12 to 16 fathoms water. After passing rocky islands, the strait becomes wide; steer then within a moderate distance of the Lombock shore, to Bally Road; or in working, you may occasion-

To sail from Flat Island, into the strait of Allass.

ally stand well over toward the Sumbawa shore: this strait will be more particularly described, in one of the following sections.

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# *STRAITS to the EASTWARD of JAVA.*

## 1st. NORTH, AND EASTERN PART OF JAVA: ADJACENT ISLANDS, STRAITS OF BALLY, AND LOMBOCK, WITH SAILING DIRECTIONS.

North coast of Java.

NORTH COAST OF JAVA, is fronted by regular soundings, with shoal flats extending along it in several places, and some shoal patches lie detached from the shore bank; but in many parts, the coast may be approached to 8, 7, 6, or 5 fathoms, muddy bottom. There are many towns and small villages interspersed along the coast, of which CHERIBON, SAMARANG, RAMBANG, &c., are places of considerable trade, the circumjacent country being generally fertile, and abounding in grain.

Carawang Point.

CARAWANG POINT, in lat. 6° 1′ S., forms the N. E. boundary of the Bay of Batavia, and if bound from hence to the eastward, steer to pass that point in about 15 fathoms, at 2 or 3 miles distance, which is bold to approach within 1 or 1½ mile. Steer then about E. by N. to clear Sedary Shoal, which is extensive, lying 10 miles off Sedary Point, with a small channel of 4 and 5 fathoms between it and the point; the least water on it is 3 fathoms, and 10 fathoms close to, on the outside.

Geo. site of Sedary Point.

SEDARY POINT, in lat. 5° 59′ S., lon. 107° 27′ E., is not quite so woody as Carawang Point; with the low land well in sight from the deck, you will be sufficiently near the shoal.

Geo. site of Point Pamanoekan.

From the outer edge of Sedary Shoal, the course is about E. S. E. to POINT PAMANOEKAN, in lat. 6° 11′ S., lon. 107° 49′ E.; the coast may be approached to 8 fathoms, and from 10 to 14 fathoms is a proper track in the night, to pass within the

Woerden Castle Rock.

WOERDEN CASTLE ROCK, where the ship of this name was lost, which lies in the stream of 17 fathoms about 12 or 13 miles N. E. by E.* from Point Pamanoekan. Close to its inner edge the depth is 15½ fathoms, close to the outer edge 18 fathoms, and in 20 fathoms a ship will pass outside of it about 3 miles. About 8 or 9 miles E. by S. from Point Pamanoekan, and 2½ or 3 miles off shore, there is a Three Fathoms Bank, in the stream of 6½ fathoms. The coast from Sedary to Indramayo Point is low near the sea, with some high land in the interior, and may be approached safely to 8 fathoms.

Geo. site of Indramayo Point.

INDRAMAYO POINT, in lat. 6° 15′ S., lon. 108° 20′ E. by chronometers, is of moderate height and woody, and from having a river contiguous, it appears like an island: there is good anchorage on the West side of this point in the easterly monsoon, in 4 or 5 fathoms.

Geo. site of Pulo Rackit.

PULO RACKIT, in lat. 5° 36′ S., lon. 108° 22′ E., fronts Indramayo Point, and lies in the stream of 25 fathoms; it is sometimes called Bumkin's Island, but this name is generally given to the dangerous rocky banks lying to the North and N. N. E. of Pulo Rackit, partly above, and partly under water, formed of detached patches of rocks, with deep water of 20 to 26 fathoms between them.

Geo. site of Bumkin's Island.

BUMKIN'S ISLAND, or OUTER SHOAL, in lat. 5° 47′ S., lon. 108° 23′ E. by chronometers, is formed of white sand in the centre, with black rocks stretching out a great

* The Dutch charts place it about N. E. from that point.

way at each extremity; close to it, the depths are from 23 to 26 fathoms, and 4 miles N. N. E. from it there is 30 fathoms blue mud. The Volunteer, in October, 1812, had 22 fathoms mud, with the shoal bearing from South to S. W. by W., distant 1½ mile from the nearest part; a large proa was lying here, (probably fishing) the crew of which had built a hut on the shoal. Between this outer shoal and Pulo Rackit, lies the Middle Patch, or Shoal, with soundings of 23 and 24 fathoms around, and between it and them. Upon this Middle Patch, the ship Bria de Mer, from Samarang, in October, 1812, got in the night, and a few minutes before striking, had 26 fathoms water; she lay 18 hours on the shoal, and got off with the loss of her rudder.

If working through the channel between Pulo Rackit and Indramayo Point in the night, come no nearer the island than 20 or 21 fathoms, nor under 10 fathoms toward the point.

CHERIBON MOUNTAIN, in lon. 108° 26′ E., will be discernible when in sight of Indramayo Point, and this point must not be sunk to the northward of W. by N. if a ship is not bound into Cheribon; for if brought to bear W. N. W. she would get upon the mud bank of Cheribon, which should not be approached under 8 or 9 fathoms. Cheribon Mountain.

The anchorage at Cheribon, or Ceribon, is to the N. E. of the fort, in 3½ to 5 fathoms, and it is sheltered from the N. W. monsoon, by a shoal bank that stretches from the North point of the bay to the eastward. Ships steering for the bay, must keep well to the eastward of the point, and round the bank in 6 or 7 fathoms; and having approached the Java shore to 5½ or 5 fathoms, they ought to haul to the westward for the road.

From Cheribon to Taggal the coast is low, but inland the country is mountainous, and TAGGAL MOUNTAIN, situated in about lon. 109° 19′ E., will be seen bearing S. E. by S. when off the bight of Cheribon, and is higher than Cheribon Mountain. If within 4 leagues of the coast of Taggal, a remarkable crooked hill called Goonong Gaja or Elephant Hill, will be seen at the foot of the mountain, considerably to the eastward of Taggal, the flagstaff of the latter being in lat. 6° 50′ S., lon. 109° 14′ E. The anchorage here, is in 4 to 5½ fathoms, with the fort bearing South or S. by E., and it is 9 or 10 leagues to the eastward of Cheribon. Taggal Mountain. Geo. site of Taggal Flagstaff.

TAGGAL ROCK, or CARRANG LASAROOK, in lat. 6° 45½′ S. lies to the N. Eastward of Taggal, about 4 miles off shore, in the stream of 9 fathoms, on which the sea sometimes breaks; at other times it is not visible, for Capt. Owen, in H. M. sloop Baracouta, on the 20th of August, 1811, ran against it while keeping a good look out. When the rock bore West ⅓ of a mile, peak of Taggal Mountain bore S. ¼ E., Elephant Hill S. 27° E., next high peak East of the Elephant S. 50° E. Taggal Rock.

On the 24th of August, working along shore within Carrang Lasarook, Capt. Owen observed at noon in lat. 6° 48′ S. with Taggal Peak S. 1° E., Elephant Hill S. 30° E., Taggal Flagstaff W. S. W., a village S. 45° E., off shore about 2½ miles, when the breakers on Lasarook were seen from aloft bearing North, about 2 miles distant.

To pass within this danger, 6 fathoms is a good depth, and not less than 11 fathoms to pass it on the outside.

From Taggal the coast lies nearly East to Samarang, and should not be approached under 14 or 15 fathoms in the night when about 6 leagues to the eastward of Taggal, for nearly fronting Point Pamalang, lies the HOOGERMEER SHOAL, from which the Elephant Hill is said to bear S. S. W. From hence, 14 to 20 fathoms is a good track in the night, to avoid a Three Fathoms Shoal said to lie off Roebang in 23 fathoms water, or 9 or 10 leagues to the eastward of Pamalang Point, and another shoal in 12 fathoms off Kandal, more to the eastward; the latter having a channel of 10 to 5 fathoms between it and the Java shore. Hoogermeer Shoal.

Between Taggal and Samarang, the land is high in the interior, and of the most conspi-

cuous mountains toward the latter, are the Brothers, 2 remarkable peaked mountains, the easternmost being farther inland than the other. To the eastward of these, stands a mountain by itself called MARBABOE or SAMARANG HILL, bearing S. $\frac{1}{4}$ E. from Samarang Road and Flagstaff, the latter being in lat. 6° 57′ S., lon. 110° 25′ E.

Geo. site of Samarang.

SAMARANG BAY, bounded on the East side by the high land of Japara, is situated directly South from the island of Carimon Java: the anchorage in 5 or 6 fathoms mud, about 4 or 5 miles off shore, is in lat. 6° 53′ S., with the Flagstaff of Samarang bearing from South to S. S. E., the high land of Japara N. E. by E., and the western extreme of Java West; or a small ship may anchor in 4½ or 4 fathoms, nearer the shore. Ships which touch here, may procure provision and refreshments; also at the fort and settlement of Japara, situated on the West side of the projecting land, that forms the eastern side of Samarang Bay, and stretches a great way to the northward.

Japara.

The coast about Samarang, being very low and forming a deep bight, when off it, the high land of Japara will be seen bearing about E. by N. appearing like an island, the course from Samarang Road to Japara Point being about N. N. E.

Geo. site of Mandalique Island.

MANDALIQUE ISLAND, in lat. 6° 22′ S., lon. 110° 54′ E. by chronometers from Batavia, fronting Mount Mosia, the next to the eastward of the high land of Japara, and near the sea, is a small round island about 2 or 3 miles off the projecting part of the coast, having 5 fathoms about 1½ mile off, and is bold to approach; and there is said to be a passage with 4 fathoms between it and Japara Point. Do not bring this island to the northward of W. by N. till 5 leagues past it, to avoid an extensive mud bank, projecting from the next point to the eastward. About 9 leagues to the E. S. E. of the latter point, in lat. 6° 35′ S., lon. 111° 27½′ E., LERANG POINT is situated, having in lat. 6° 41′ S. Lassem Hill over it; and between these points lie the ports of RAMBANG and LASSEM, near the East part of the bay, noted for teak timber, and ship building; with the village Jawana at the S. Western part of the bay.

Geo. site of Lerang Point.

Lassem.

Geo. site of Rambang.

Rambang, in lat. 6° 42′ S., lon. 111° 19′ E., has several small isles and shoals on both sides of the anchorage; to avoid which, bring the Flagstaff South and run into 4 fathoms.

From Lerang Point, the coast is clear of all danger eastward to the entrance of Sourabaya, and may be approached to 6 or 5½ fathoms, or in some places to 4½ fathoms.

Geo. site of Point Panka.

PANKA, or PANCO POINT, in lat. 6° 52′ S., lon. 112° 34½′ E. by chronometers from Batavia, forming the West side of the strait or channel leading into Sourabaya, is low and sandy with a temporary flagstaff on it. A little to the westward of it, lie 4 little remarkable hills, 1 called Coffin Hill from its appearance when viewed from the westward, 1 like a Button, another like a Hat, and the longest to the westward like a Gunners' Quoin.

Coast adjacent.

If you intend to wait for a pilot, to carry your ship into Sourabaya, bring Point Panka to bear S. W., and anchor in 5 or 4½ fathoms off the Town House of Zidayo, where the pilots come from.

Geo. site of Sourabaya.

SOURABAYA, in lat. 7° 15½′ S., lon. 112° 48′ E. by chronometer from Batavia, is a considerable town on the East part of Java, situated at the South end of the Strait of Madura, opposite to the S. W. end of the island of this name. Ships going to this place, generally require pilots to carry them through the strait. The anchorage is about ½ a mile to the northward of the river that runs through the town, with the flagstaff of the fort bearing S. 2° E., and the village of Grisse W. 30° N. This place abounds with provisions and refreshments of various kinds, and the Dutch carry on a considerable trade between it and Batavia, and the other ports along the coast.

TO SAIL INTO SOURABAYA,* observe that the North entrance of the strait of Madura, formed between the N. W. end of that island and Point Panka, is about 15 miles wide, and the channel leading to Sourabaya is close round Point Panka, all the intermediate space between it and Madura being occupied by a mud flat, excepting a small channel for boats close along the Madura shore. To sail into Sourabaya.

Bring Point Panka to bear South till in 5 fathoms, you will then be about 2½ or 3 miles distant, and near the edge of a rocky spit that projects from the point to the N. E. Keep about the same distance, rounding the point in 4½ or 5 fathoms, and when abreast of it, steer S. S. E. till you get Fort Lodowick to bear S. E. ¾ S., then steer direct for the fort, and your soundings will be about 3 fathoms at ½ flood.

In running up, go to the westward of the fishing stakes, and round the East point of Fort Lodowick at a ¼ mile distance. Should you have the wind contrary, after getting Zidayo House to bear S. S. W. ½ W., never bring Fort Lodowick beyond S. E. to S. E. by S., and tack in ¼ less 3 fathoms on each bank, till you have brought Zidayo House to bear W. by N., then you will quickly deepen: you have deep water rounding the fort, but it shoals very quick on the edge of the mud flat. When abreast of the East angle of the fort, steer over to the Madura side, to avoid a spit of sand stretching off from the S. E. end of the fort nearly a mile; from hence, keep close to the Madura shore, and when you see the fishing stakes, pass to the westward of them. Afterward, you may work from side to side without fear, as no other danger appears to exist until you reach the S. W. point of Madura, off which lie the Buffalo Rocks, joined by a sand bank to the point. You may, however, pass them within ½ a mile, then steer direct for the shipping, and anchor in 8 or 9 fathoms about ½ a mile off the mouth of the river.

MADURA ISLAND, is of an even appearance, moderately elevated, its N. W. Point being in lat. 6° 53′ S., lon. 112° 45½′ E., the N. E. Point in lat. 6° 53′ S., lon. 113° 58½′ E. by chronometers from Batavia; and the whole of the North coast which extends nearly East and West, is bold to approach, with regular soundings of 8 or 10 fathoms within 1 or 2 miles of the shore, in most places, but the East point opposite to Pondy, has a reef projecting from it to a considerable distance. Geo. site of Madura.

At the N. E. part of the island there appears to be a good watering place, as the Phœnix, on the 12th of February, 1707, anchored there, in 12½ fathoms soft ground, with the extremes of Madura bearing from S. E. ½ S. to W. ½ S., and the watering place W. S. W. ¾ S. distant 4 or 5 miles, which is situated in a sandy bay, at the foot of a hill having the same bearing: this sandy bay has some rocks at each extremity, but affords good anchorage, and the water is excellent, easily procured, with plenty of firewood close to the sea. On the 26th of February, she weighed (having remained from the 12th,) and anchored again in 13 fathoms, Madura bearing from W. ½ S. to S. E. ½ E., watering place S. ¾ W., nearest shore S. W. ½ W. distant 3 miles, Pondy Island S. E. 5 leagues, the southern part of it shut in with the East point of Madura. Watering place.

PONDY, a small and level island, in lat. 7° 1′ S., lon. 114° 4′ E., is distant from the N. E. part of Madura about 4 or 5 miles having a safe although narrow passage between them, by keeping the island from ¾ to 1½ mile distant. At Pondy, plenty of fowls and sheep may be procured, with bullocks weighing from 4 to 4½ cwt. at 4½ dollars each; and about a mile off its eastern side, the anchorage is good in 10 or 11 fathoms mud. The channel betwixt it and Galion is very safe, about 3 leagues wide, with soundings from 10 to 24 fathoms. Geo. site of Pondy Island.

* These directions are by Lieut. Arrow, of the Antelope cruizer, who says, pilots cannot always be procured, but by following these directions, any ship not drawing more than 16 feet water, may safely proceed up to Sourabaya.

Shoals South of it.

To the South of Pondy there are 2 extensive shoals, the northernmost of which was seen on with the South end of Galion bearing E. by S. ½ S., then distant from the shoal 2 miles, and 4 leagues from Galion; same time, the other shoal bore S. S. E. ½ E. about 1½ mile, Pondy N. E. by N., and Turtle Island visible from the deck S. W. ¾ S. The southernmost of these 2 shoals is a large sand bank, and when on with the South end of Galion, it bears E. ½ S. In July, 1811, H. M. S. Psyche, after passing between Pondy and Madura, least water 5 fathoms, passed also to the westward of these shoals at 2 miles distance, then steered S. by W., and passed Turtle Island at the distance of 2 miles.

To proceed into Samanap.

If bound to Samanap by the channel between Pondy and Madura, keep within 1 or 1½ mile of Pondy to avoid the shoal bank off the latter, then steer S. by W. till abreast of the 2 shoals which lie South of Pondy; with this course, 7 fathoms will be the least water, and you will rise Turtle Island about S. by W. ½ W. or S. S. W., which is a small sandy isle with trees: when abreast of the shoals, steer a proper course along the South side of South East Island, keeping in 4 to 5 fathoms until you see the town of Samanap bearing N. N. W., and anchor in 4 fathoms about 4 miles from the town.

Samanap.

SAMANAP, or ZAMANAP, is a considerable town on the S. E. side of Madura, belonging to the Dutch, where provision and refreshments may be procured, the adjacent country abounding with rice, and teak timber for ship building. Here, the Dutch build their largest ships for the country trade.

The channel leading into Samanap Bay, is on the South side of S. E. Island, having Turtle Island at the entrance, which is small, and the large Island Nightingale inside; both

To sail to the anchorage.

of these, are on the South side of the common channel. A ship working in, may stand toward the islands on the South side to 13 or 14 fathoms, and to 8 or 10 fathoms on the opposite side, shoaling gradually toward the entrance of the bay. The anchorage is in 4 or 5 fathoms mud, with the South point of Samanap Bay bearing W. 13° S., the North point N. 23° W., the fort N. 33° W., the outer extreme of S. E. Island East, and Galion E. ½ S., off the nearest shore about 2½ miles. To the westward of Turtle Island, with it bearing East to E. by N., and the East end of S. E. Island N. E. by N., there is a shoal, having on it only 2 and 3 feet water.

Galion, and adjacent islands.

GALION, or RESPONDY ISLAND, situated to the S. Eastward of Pondy, is higher and of greater extent; both are well cultivated, having a pleasant appearance, and the common channel leading to the strait of Bally, is betwixt these islands. There is also a safe channel with soundings in it, East of Galion, which is bounded on the eastern side by Great Hog Island, and the small adjacent islands: Great Hog Island, lies directly to the eastward of Galion, having several small islands to the northward, and the Four Brothers farther to the eastward.

Geo. site of the Four Brothers.

FOUR BROTHERS, are merely sand banks or sunken islands, lying to the westward of Kangelang, the N. Easternmost of them being in lat. 7° 0′ S., lon. 114° 50′ E., and on the North side of them, at the distance of a cable's length, the depths are 18 and 20 fathoms sandy bottom.

Geo. site of Urk.

URK ISLAND, in lat. 7° 15′ S., lon. 115° 13′ E., by chronometer from Batavia, is of middling height, with a sandy beach around, a small reef at its S. E. part, and a rocky ledge projecting ½ mile from its West and W. N. W. point; and from this point, the Four Brothers are discernible.

Geo. site of Kangelang.

KANGELANG or CANGAYANG ISLAND, is high and of great extent in an East and West direction; the North end is in lat. 6° 53′ S., lon. 115° 17½′ E., and the South end

in lat. 7° 19′ S., lon. 115° 25½′ E. by the Dutch frigate Maria Reygersbergen's chronometers from Batavia, which ship with her convoy, at anchor under Kangelang, on the 21st of March, 1805, in 24 fathoms mud, made the observed lat. 7° 9′ S., lon. 115° 19½′ E., Urk Island bearing S. W. about 10 miles. Between Kangelang and Urk, the anchorage is good over a sandy bottom, 25 fathoms close to Urk, 40 to 45 fathoms in mid-channel, and within 3 cables' lengths of Kangelang, from 10 to 15 fathoms.

Passage to the southward of Kangelang.

The above-named frigate, and convoy, from Batavia to Amboina, passed along the North coast of Java and Madura, then on the North side of the Four Brothers and Urk, between them and Kangelang; afterward, along the North coasts of Lombock, Sumbawa, Flores, and Wetter. The Dutch ships from Banda, bound to Batavia in June, July, and August, also prefer this route to that through the straits of Salayer.

Geo. site of Antelope's Islands.

The Company's cruizer Antelope, commanded by Lieut. Arrow, bound from Sourabaya to Amboina, passed to the South of Kangelang on the 23d of October, 1812, and saw 4 small low islands covered with trees, having no soundings near them, and they appeared to be clear of dangers. By noon observation when the S. Easternmost of these islands bore East, he made it in lat. 7° 12½′ S. and the central island in lat. 7° 11′ S. and in lon. 115° 50′ E. or 4° 38′ West of Middle Island in Salayer Strait by chronometers; at the same time, land thought to be Kangelang, was seen from the mast-head at a great distance, extending from N. E. to N. W. These islands seem to lie far to the eastward of Urk, and at a great distance from the S. Eastern part of Kangelang by the above bearings, which would make the South coast of the latter, farther to the northward than placed by the Dutch frigate's observations; neither do the Dutch, place any islands far distant from the southern coast of Kangelang.

North coast of Kangelang

The channel to the northward of the Four Brothers, and between Urk and the S. W. part of Kangelang, appears to be very safe, and frequented by the Dutch, as described above. There appears, also, to be a safe channel along the North coast of the latter, and between the islands which front its eastern extremity, through which the ship James and Mary passed when bound from Borneo to England; the following extract from her journal may perhaps be useful, as the coasts of Kangelang are little known to British navigators.

On the 2d of February, 1722, saw the North coast of Kangelang, and mistook it for Madura; at noon the eastern extreme bore S. E. by E. 4 leagues, having shoaled in the night suddenly from 42 to 17 fathoms water.

February 3d, steered along shore E. S. E. and S. E. till 7 P. M. then anchored in 19 fathoms, the northernmost extreme of the land N. W. by W., a small island to the eastward S. E. by E. distant about 2 leagues, and our distance off shore 3 miles. In the morning, find by several small islands and sands near us, that this is not Madura, but Kangelang or Tanjayang, the easternmost point bearing S. E. ½ E., and 2 small isles near to that seen at 7 P. M., 1 bearing E. S. E. ½ S., a round sandy isle E. by S. ½ S., a long low island E. by S., and a small isle or sand appearing above the surface of the water E. S. E. distant above a mile, besides several others more westerly seen yesterday. In a low valley near the sea, found several springs of fresh water, from whence we took on board 38 tons by the 7th. On the 9th, weighed and steered N. N. W. out of the bay, till in 25 fathoms water, but had 5 fathoms on a shoal. With westerly winds, steered along the coast to the eastward, and saw a village, the chief of which came on board by invitation; here we lay 2 days, and got 2 or 3 Buffalos, some fowls, and a few goats.

Watering Bay.

On the 16th, 17th, and 18th, kept the boat sounding a-head, among the islands off the East end of Kangelang, where we found a passage between 2 islands, which I call Hopewell Island, and Passage Island. On the 16th, at 3 P. M. when Hopewell Island bore S. S. E. 3 leagues, a dry sand was bearing E. N. E. about 4 miles. At 7 P. M. anchored in 8 fathoms sand and shells, off Passage Island, the East point bearing E. by N. off shore 2 miles, and the westernmost part of Hopewell Island W. by N. ½ N., and Lombock high land

Islands forming a channel at the East end of Kangelang.

S. S. E. At 6 A. M., weighed, and had soundings from 5 to 18 fathoms, but the weather becoming squally, anchored again.

February 17th, at 5 A. M. weighed with the wind at W. N. W., soundings from 19 to 35 fathoms. At 8 A. M., the East point of Long Island* bore South, distant 3 leagues; at noon, its South point bore W. by N. distant 1 league, no ground 35 fathoms.

February 18th, at 4 P. M. the East point of Long Island bore N. E. by N., and its West point N. N. W., off shore 4 leagues. At 6 P. M., part of Kangelang bore N. W. ½ N., distant 6 leagues, high land of Lombock S. E. by S., distant about 25 leagues. The westerly winds continued, which carried us clear through the strait of Lombock on the 20th of February.

Kalkoon Islands.

KALKOON, or TURKY ISLES, have been already mentioned, in the directions given for sailing from Batavia to the straits of Salayer. These isles, are low and small, stretching nearly from Kangelang, North and N. Eastward, to about lat. 6° 10′ S., having dangerous coral banks projecting from them far out to the eastward. The fleet from China, under convoy of H. M. S. Belliqueux, after passing through Macassar Strait, made these isles on the 12th of July, 1801, bearing from N. 58° W. to W. 10° S., some of them just in sight from the poop, distant 7 or 8 leagues. Here, they got overfalls from 50 fathoms mud, suddenly to 7 and 5 fathoms coral, and the Belliqueux struck in 4¼ fathoms by the lead, and deepened at 1 cast from 10 to 40 fathoms. At this time, the isles were not visible, but from noon observations taken 3 hours previously, she was in lat. 6° 30½′ S., lon. 116° 19′ E. by mean of 5 ships chronometers, Hastings Island supposed to bear S by E. ½ E. Near the same place, the Dorsetshire saw the rocks under the bottom, and had ¼ less 5 fathoms.

Geo. site of the coral banks adjacent.

Geo. site of Hastings Island.

HASTINGS ISLAND, in lat. 6° 56′ S., lon. 116° 24′ E.† by mean of the chronometers of the fleet mentioned above, is low, and it is the S. Easternmost of the Kangelang group, having a good channel to the eastward, betwixt it and the westernmost of the Great Pater Nosters, leading to Lombock, or Allass Straits. From what has been stated, it appears, that the Kalkoon Isles ought not to be approached on the East side in large ships, without great caution. Working to the southward with a S. E. wind, and westerly current of 10 or 14 miles in 24 hours, the fleet had generally soundings from 46 to 58 fathoms on the East side of these isles, when some of them were visible from the poop or mast-head. After beating 2 days, they weathered Hastings Island on the 14th of July, passed to the eastward of it at 5 leagues distance, and anchored at Bally Road, in Allass Strait, on the following day.

Adjoining channel.

soundings.

Bally Strait.

BALLY STRAIT, has been mentioned in volume first of this work, under the head of "Islands to the South and S. Eastward of Java, &c." but it becomes necessary here, to describe particularly the dangers in this strait, and in those adjacent.

Cape Sandana.

CAPE SANDANA, or SADANA, in about lat. 7° 49′ S., bearing nearly South from Galion, is the extremity of the high land that forms the N. E. end of Java, and bounds the North entrance of Bally Strait on the West and N. W. sides. Over the point that forms the cape, stands a high indented table hill, called Mount Sandana, with each of its extremes sloping down, 1 forming the cape, and the other rounding into a bay. Soundings of 40 to 60 fathoms, extend from Galion Island to this cape, and also to the westward, but none to the eastward of the cape. MYNDERS ROCKS, situated about 6 or 7 miles to the north-

Mynder's Rocks.

* Called so, by the natives.

† Lieut. Arrow, of the Antelope, passed on the South side of this island, on the 24th of October, 1812, and made it in lon. 116° 18′ E. or 4° 10′ West of Middle Island in Salayer Straits by chronometers. Capt. Bowman, passed to the North and eastward of it at 5 leagues distance in the Diana, on the 27th of December, 1812, and made it in lat. 6° 53′ S., lon. 116° 14′ E. or 9° 22′ East of Batavia by chronometers.

ward of the nearest land of the cape, consist of 3 small sand banks above water, surrounded by rocks, with a reef projecting to the S. E., having 60 fathoms within a cable's length of them at the North and East sides. These rocks are on with the centre of Table Hill, bearing S. by W. ½ W., on with its eastern brow S. ¾ W., and on with the eastern extreme of Java bearing S. by E. ¾ E. H. M. S. Psyche, at noon, observed in lat. 7° 41′ S., with these rocks in sight from the deck bearing E. N. E. ½ N. about 6 or 7 miles, a remarkable hill on Java South, Cape Sandana S. E. 7 or 8 miles. There appears to be a shoal projecting from Mynder's rocks to the westward, for the Valentine had Cape Sandana bearing S. by E. about 4 leagues distant, when Mynders rocks bore S. E. ¼ S., about 4 miles. Her boat found then 3 fathoms upon the shoal to the westward, with these rocks bearing E. N. E. and Cape Sandana S. by E. About midway in a direct line from the easternmost point of Cape Sandana toward Gilboang, lies a 2 fathoms bank near 2 miles off the Java shore, with 20 fathoms water inside of it, and 30 or 35 fathoms near it to the North and southward, and the coast is lined by a reef from the point to the entrance of Bally Strait.

To sail into the Strait of Bally.

The narrow part of Bally Strait, begins about 4 leagues to the South of the easternmost point of Cape Sandana, having Gilboang, or Gilboan Island on the West side, which lies near Water Point on Java, and the S. Eastern side is bounded by the N. W. point of Bally and Hart Island contiguous, and a little to the eastward. There is no soundings near the reef that projects from Gilboang Island to the N. E. and S. W., nor near Hart Island, nor in the narrow gut that forms the North entrance of the strait which appears to be only about a mile wide. Ships, should therefore, endeavour, to keep in mid channel when passing through the strait, with the assistance of boats towing a-head if calm; for it is unpleasant, and sometimes dangerous, to approach the points close, as the tides run 6 knots an hour during the springs, with eddies near the points in the narrow part, which are liable to horse you on the steep rocky shore of Java. On this account, Bally Strait is *now* little frequented, particularly when ships are coming from the northward; the preference being justly given to the straits of Lombock, Allass, or Sapy.

Fort Utrich and anchorage.

Fort Utrich, situated in about lat. 8° 16′ S., in a bay on Java, at the southern part of the narrows, affords refreshments and anchorage in 9 or 10 fathoms soft ground, with the fort bearing West, about a mile off shore; but care is required to avoid the Deptford Rock, which is directly in the fair way in entering the bay from the northward. The Deptford grounded on it, December 26th, 1795, in 3 fathoms, found 2¾ fathoms on its summit, and could perceive several pieces of the coral break off as the ship sallied. It is not more than a ship's breadth in diameter, shelving down suddenly to 6 fathoms, with 10 fathoms water within it, and 14 fathoms outside at the distance of a ship's length. When on the rock, the red tiled house or store-house bore W. S. W., the first point to the southward S. ¾ W., distance off shore about 2 miles, in lat. 8° 14½′ S. To avoid this rock, ships should not borrow under 17 fathoms in coming from the northward, until the fort is brought to bear about West, then haul in for the anchorage directly abreast of the fort and village.

Geo. site of Volcano Mountain.

The burning mountain on Bally, is in lat. 8° 24′ S. lon. 115 °24′ E. by chronometers.

Balambouang Bay.

Balambouang Bay, which stretches South 4 or 5 miles inland on the Java side, nearly in the middle of the strait, affords also water and refreshments; for bullocks may be got, and fresh water in the adjoining river. Inside of the bay, the depths are from 9 to 7 and 6 fathoms, but ships generally anchor off the entrance, in 10 to 12 fathoms soft ground. Goonong-Ikan point, which forms the eastern extreme of the bay, is in lat. 8° 23′ S., but the Dutch plans make it more to the southward.

It is high water here at 10¼ hours on full and change of the moon, and the rise of tide is 6 to 8 feet. From this bay the strait takes a S. E. direction, then southerly, and is much wider than the northern parts; but the ebb tide generally inclines to set toward the Java shore, where there is seldom any safe anchorage to be found; and the East point of Java

being fronted by sunken rocks and breakers, requires a good birth in passing out to the southward, or in entering the strait from that direction.

Geo. site of N. E. point of Bally.

Table Point, the southern extremity of the Island Bally, is in lat. 8° 50′ S., and forms the eastern boundary of the South entrance of the strait. The N. E. point of Bally is in lat. 8° 18′ S. lon. 115° 43′ E., by chronometers from Batavia.

Lombock Strait.

LOMBOCK STRAIT, has been described in volume first of this work, under the head of "Islands to the South and S. Eastward of Java, adjacent straits and South coast;" and here, it becomes necessary to add a few remarks for the navigation of this strait. Although the tides or currents run strong through the middle of the strait, with eddies and no soundings, yet there are a few places of anchorage on each side, where ships might occa-

Carang Assem.

sionally stop, and procure refreshments. CARANG ASSEM, on the Bally shore, at the western side of the strait, has a small stream of fresh water close to the village, where bullocks, hogs, and poultry may be got, and the contiguous country is cultivated. Captain Forrest, anchored here, in 9 fathoms sandy bottom, about ½ a mile off shore, with Bally Peak bearing N. by E.; and he experienced very little tide in this anchorage, when it was running 3 knots a little way out in the offing.

Ampannan Bay.

The large and deep bay of AMPANNAN, or APPENAM, situated on the Lombock side of the strait, nearly opposite to the road of Carang Assem, formed by Tanjong Rumbeeah to the northward, is 3 or 4 miles deep, and of considerable extent. H. M. S Psyche touched here, on the 3d. of August, 1811, for which place, Mr. George Dawson, an officer of that ship, gives the following directions.

On the South side of a high remarkable bluff cape, terminating to the North and eastward a small sugar loaf peaked hill, are situated the villages Sangeegee, Ampannan, and Tanjong Carrang, fronting a fine level country, with many small rivers, and abounding with provisions of every kind.

To sail into it.

To know this bay, and to sail into it, when coming from the northward, observe, that on with the Peak of Lombock bearing E. ½ S., there is an island with a hill on its S. E. end, which pass at 3 or 4 leagues distance, and steer eastward, not approaching the main under 6 or 7 miles, until Lombock Peak bears N. E. by E. ½ E., or Bally Peak W. N. W., on account of a ledge of rocks that extends from Sangeegee at the North side of the bay, in a S. S. E. direction to 2 small islands at the opposite side. In the plan of this coast, published by Mr. Dalrymple, 7 fathoms is marked as the least water on this ledge, but our boats found only 3 fathoms with Lombock Peak bearing E. by N., and the northern extremity of the land N. by W. ¼ W.; and the inner verge of the ledge, appears to be about 3½ miles distant from the shore.

Steering in for Ampannan, with Lombock Peak bearing N. E. by E. ½ E., northern extreme N. by W., and Ampannan River E. by N., with boats sounding a-head, we had several casts of 7, 8, and 9 fathoms coral, then deepened again to 18 fathoms sand, and shoaled gradually to the shore. We first anchored in 17½ fathoms, about 3 miles off Ampannan bearing N. E. ½ E., Sangeegee Village N. N. E., Tanjong Carrang S. E. ½ S, Lombock Peak E. by N. ¾ N., extremes of Lombock from N. N. W. ½ W. to S. W. by W., and Bally Peak W. N. W.; but being too far off for the convenience of watering, weighed and anchored again in 14½ fathoms fine sand, with the entrance of Ampannan River bearing

Anchorage.

East distant 2 miles, Lombock Peak E. by N. ½ N., and Bally Peak W. by N. ½ N.; from this anchorage, the shoalest part of the ledge bore W. ½ S., distant 1 mile.

A ship steering in for the anchorage, should bring Lombock Peak to bear N. E. by E., and may then pass with safety over the ledge, and anchor where most convenient. Should the Peak be obscured by hazy weather, or the rising sun, the river of Ampannan being remarkable (though not the entrance) by an opening in the trees, with huts on both sides, will answer as a guide, for this opening kept E. by N. will be a good leading mark. No tide

was perceptible in the road, but the descent of the water from the high land runs constantly out of the river, and the rise of tide is 7 feet; high water at 8 A. M. on full and change of the moon. Our boats could not enter the river, on account of shoal water and a heavy surf on the bar: the landing place is on the beach at the head of the bay, about a $\frac{1}{4}$ mile northward of the river, where the surf is not so high.

Fresh water river.

Water is got from the river about 100 yards from the beach, by rolling the casks across a neck of land, which is always good, not being affected by the flowing of the tide. The entrance of the river is in lat. 8° 32′ 51″ S., and lies about N. N. E., taking its rise from the high land. Wood is scarce, all the land being cultivated; but provisions are got from the Captain Chinaman, at moderate prices, viz. fine bullocks from 300 to 400 lb. at 6 to 8 dollars; pigs, poultry, sweet potatoes, pumpkins, oranges, and other tropical fruits, are procured at reasonable prices, and sometimes very cheap, also rice and arrack. A fleet of 10 or 12 ships, might be well supplied with provision and refreshments here, if they can conveniently remain a few days.

Provisions and Refreshments.

The trade is carried on by proas of 40 to 80 tons burthen, which go and return with the monsoons to Java and other parts; the exports are chiefly rice and slaves; the latter, procured by war, among the different tribes; and the imports, opium and piece goods.

The Rajah of this part of the island, resides at Carrang Assem, about 7 miles in the interior, but Lombock is said to be governed by 3 different chiefs, who can muster 20,000 fighting men, many of which are trained to matchlocks of their own manufacture; and the pargalimo, or general, stated, that the population of the island exceeded 50,000. The villages have wide streets, with brick buildings for the principal inhabitants, encircled by walls about 15 feet high; and the other buildings for the inferior ranks, are large huts surrounded by a wall; the streets are lined by rows of trees, and these towns or villages have a neat appearance.

Geo. site of Isles off N.W. point of Lombock.

There is a high round isle off the N. W. point of Lombock, with 2 low isles a little to the N. Eastward; and these isles lie in lat. 8° 13′ S., lon. 115° 59′ E. by chronometers.

At a small distance off the S. W. point of Lombock, there is a rock above water, and 3 rocky islets lie near the S. W. point of Banditti Island, with a small isle near its N. W. point, which ought to have a proper birth in passing, by keeping in the middle of the strait. The Schilder's Shoal, said to lie to the northward of Lombock, *probably* does not exist, although a good look out is proper, when passing its assigned situation.

Tides, or currents.

The tides or currents, seem to be irregular in Lombock Strait; those which run to the northward, greatly prevailing when the winds are southerly, or light and variable. Ships, therefore, may often get quickly through the strait to the northward, whilst those bound to the southward, are liable to great delay. It has been already mentioned in one of the preceding sections, where directions are given for sailing through the Carimata Passage, that the Minerva, Brunswick, and Chesterfield, were from the 16th to the 30th of January, 1794, beating through Lombock Strait to the southward. Of late years, the preference has generally been given to Allass Strait, particularly in ships bound to the southward.

## 2d. GREAT PATER NOSTERS; STRAITS OF ALLASS, AND SAPY, WITH SAILING DIRECTIONS.

Geo. limits of Great Pater Noster Islands.

GREAT PATER NOSTERS, consist of groups or ranges, of mostly low woody islands, extending nearly E. N. E. and W. S. W., about 32 or 35 leagues: many of them being surrounded by reefs, and having shoal patches of coral stretching out a considerable distance to seaward, they are seldom closely approached, consequently very imperfectly known. The westernmost islands are situated in about lat. 7° 15′ S., lon. 117° E.; Cap-

tain Greig, of the Minto, made the S. Westernmost island in lat. 7° 32′ S., lon. 117° 16′ E. by lunar observation: the channel betwixt them and Hastings Island, mentioned in the preceding section, is about 12 leagues wide. The southernmost island, is in lat. 7° 34′ S., lon. 117° 30′ E., bearing nearly North from the West end of Pulo Majo, on the North coast of Sumbawa; and directly to the northward of the 2 sand banks described under the article Pulo Majo, in the sequel of the last section but one. When Pulo Majo bore from S. S. W. to S. by E. ¼ E. distant 6 leagues, Selonda Island S. S. E. ¾ E., the Ardassier saw the southernmost island of the Great Pater Nosters bearing N. N. W. ½ N., distant about 5½ or 6 leagues.

The easternmost island of the Great Pater Nosters, is situated in about lat. 6° 42′ S., lon. 118° 40′ E., which with the adjoining islands, are surrounded by reefs. When in lat. 7° 38′ S., lon. 117° 41′ E., the Minto saw 1 of the S. Easternmost Pater Nosters, a rocky islet bearing N. N. E., distant 5 miles; and the Dutch frigate, Maria Reygersbergen saw 2 of them, low and woody, which she made in lat. 7° 36′ S., lon. 117° 55′ E.

Geo. limits of the Postillions.

POSTILLIONS, consist of a large range of mostly low islands, extending about 10 leagues nearly S. E. and N. W., with reefs projecting from several of them to a considerable distance. The N. Westernmost Islands of this range situated in lat. 6° 32′ S., lon. 118° 48′ E., have been mentioned in the section, "Eastern Route to China by the Pitt's Passage," where directions are given for sailing from Batavia to the Straits of Salayer. Lieut. Arrow, in the Antelope, passed on the North side within 7 miles of these islands, on the 29th of October, 1812, and saw 4 of them, which were low and woody, lined with sandy beaches, apparently clear of danger, and no soundings were got in passing. The N. Westernmost island has a small lump in the centre, and this island he made in lat. 6° 32′ N., lon. 118° 45½′ E. or 1° 42½′ West from Middle Island in Salayer Straits by chronometers. The easternmost limit of these islands, in lat. 6° 45′ S., lon. 119° 15′ E. has been described near the sequel of 1 of the preceding sections, under the head, "Directions for Sailing from China outside of the Philippine Islands, and through the Pitt's Passage into the ocean."

There is a channel between the Postillions, and the easternmost islands of the Great Pater Nosters, through which the Pocock and some other ships have passed, in proceeding from the Strait of Macassar to Sapy Strait. With a steady wind, and favorable weather, it appears to be safe; but it is not frequented, being imperfectly known, and the islands on each side are said to have dangers lining them, without any soundings in the fair channel.

Allass Strait.

ALLAS STRAIT, called GILLEESEE by the natives, has been mentioned in Volume First of this work, where directions are given for entering it from the southward; but as this strait is more frequented than those described in the last section, particular instructions for sailing through it, with a brief description of the dangers, may prove useful.

This strait, formed between the East coast of Lombock, and the West coast of Sumbawa, extends nearly N. N. E. and S. S. W. about 15 leagues, and is about 5 or 6 miles wide in the narrowest part. It is justly preferred to any of the straits East of Java, the tides being moderate, with soundings stretching along the Lombock side, whereby ships are enabled to anchor when necessary.

Geo. site of Lombock Peak.

The North part of the Island Lombock is high bold land, the extremity projecting out into a point of white appearance, in about lat. 8° 11′ S.; and the peak is in lat. 8° 21½′ S., lon. 116° 26′ E., which rises in a pyramidal form to the height of about 8000 feet* above the level of the sea, with a large crater at the summit, having formerly been a volcano. The coast of Lombock that forms the strait, is low close to the sea, with plantations of cocoanut trees at the villages.

At a small distance from the N. E. end of Lombock, the Twins, 2 low woody islands lie parallel to it, with *apparently* a channel for small vessels inside of them: they are joined by

* By trigonometrical admeasurement, I made it 8,688 feet high.

a reef, and a spit projects from the South end of the southernmost island, having 6 or 8 fathoms on its extremity.

ROCKY ISLANDS, consist of a group of 3 small isles with a contiguous islet, having reefs and a sand bank projecting from their eastern sides to the distance of 1 or 1½ mile; they are connected together by rocks, but may be approached within a small distance on the West side. Opposite to these, there is a group fronting the Sumbawa shore, called the Ten Islands; the outermost of which, are long, low, and flat, having no soundings at a small distance from them. Between these and Rocky Islands, there are soundings of 40 and 50 fathoms toward the West side of the channel, decreasing near the reefs which front the latter. This channel is about 5 or 6 miles wide, and was formerly thought to be the only 1 leading into the strait from the northward; but the channel on the West side of Rocky Islands, is equally safe, about 2 or 2½ miles wide between the islands and the Lombock shore, with regular soundings of 12 to 17 or 18 fathoms; which render it very convenient for anchoring to stop tide, during contrary or light winds. Rocky Islands. Adjacent channels.

A ship proceeding to the southward through this channel, ought to keep at least a mile from the Lombock shore, after passing between it and Rocky Islands, in order to avoid a coral patch of 3 fathoms. It lies a little to the South of the point of land that bears about W. by S. from the South extremity of Rocky Islands, opposite to a fresh water creek in the bight to the southward of that point: near it on the outside, the soundings are irregular from 7 to 14 fathoms, and there are 10 and 11 fathoms inside, betwixt it and the Lombock shore. By hauling too much into the bight, the Surat Castle grounded on this spot on the 4th of March, 1796, but with the assistance of a fresh breeze of wind, she soon got clear off. Although the channel along the Lombock shore is safe, by keeping about 1½ or 2 miles from it; there are overfalls in several places, particularly about 3 or 4 miles to the S. S. W. of Rocky Islands, the depths are very irregular, from 25 to 10 and 7 fathoms coral rock; but there is thought to be no less than 6½ or 7 fathoms water. Directions for sailing along the Lombock shore.

SEGAR, or SEEGARRA, distant about 3 leagues to the S. W. of Rocky Islands, is a small village at the South part of the bight mentioned above, having a coral bank fronting it, with good anchorage to the southward near the Segar shore. This place is said to be superior to Bally Town for procuring water, at all times of the year. Mr. Black, touched here for supplies, and was treated in a friendly manner by the natives. Segar Village.

LOBOAGEE, or BALLY TOWN, where ships generally anchor to procure water and refreshments, I made in lat. 8° 42½′ S., lon. 116° 33′ E., by a series of observations of ☽ ☉ ✱ corroborated by chronometers, whilst at anchor in the road, in March, 1796, corresponding with the observations of several experienced navigators.* The anchorage for large ships is in 17 or 15 fathoms black sand, about 1½ or 2 miles off shore, with Lombock Peak bearing N. N. W., the southernmost bluff island on the Sumbawa side of the strait E. S. E., and the next to the northward E. ½ N. or E. ¾ N. These islands are the best guide to know when abreast of Bally Town, for being situated behind a tope of cocoa-nut trees, it is not easily perceived from the offing. A ship may occasionally anchor in 12 fathoms abreast of the river, but she ought not to go under 10 or 11 fathoms. Geo. site of Bally town. anchorage;

The town is situated on the South side of the river, which is fronted by a reef, stretching along the shore at the distance of 100 fathoms, and the proper channel through it for long boats, is nearly opposite to the river's mouth. Small boats may cross over the reef to the southward of the town, in fine weather; but on spring tides, during the southerly monsoon, strong sea breezes produce a great surf upon the reef, and then, loaded long boats can only reef,

* Capt. Bowman, in the Diana, at anchor in 10½ fathoms with the town bearing W. 4° S., distant about 2 miles, observed in lat. 8° 41′ 59″ S., lon. 116° 34½′ E. by chronometers from Batavia.

pass through the proper channel when more than ½ flood, or near high water. Here, they anchor inside of the reef, at the mouth of the river, and the casks are filled about 100 yards from the beach, then floated off to the boats, and taken in. The water is good, but ought not to be filled when the tide is high, for it is then brackish. Wood may be cut on the North side of the river, about ½ a mile up, and floated down the stream to the boats.

watering river.

In the northerly monsoon, there is seldom any difficulty in watering at Bally Town; our pinnaces got out of the river loaded at high water, but there is not sufficient depth for long boats. During the southerly monsoon, it is often tedious getting water off from the shore; for strong southerly sea breezes, generally set in at 9 or 10 o'clock in the morning on spring tides, and continue to blow right through the strait until late in the afternoon, rendering it impossible for loaded boats to get off to ships in the road.

Sea breezes.

Tides. The flood sets to the North and the ebb to the southward, in the road, about 1½ to 2 knots on the springs, high water about 12½ hours on full and change of the moon, but nearly 3 hours sooner upon the shore, and the rise of tide is 10 or 12 feet. The stream of tide is strongest on the Sumbawa side of the strait, where there are no soundings.

The chief of Bally Town, makes a demand of 2 muskets as a kind of port dues from ships which stop for water and refreshments; but he will sometimes be contented with articles of less value, such as a pair of pistols, and some powder; fire arms, shot, and coarse cutlery, being the articles they prefer. The inhabitants of this place and the other villages,* are friendly to English ships, where they procure bullocks at 8 or 10 dollars each, some goats, poultry, particularly ducks in great plenty; paddy, rice, pumpkins, sugar-cane, plantains and other fruits.

Peejow Village. PEEJOW VILLAGE, situated 4 or 5 miles to the southward of Bally Town, in the bay formed by the S. E. end of Lombock, is *said* to be a more convenient place for watering than the former; having a river navigable by boats, where the casks may be filled without landing them, and supplies be procured in great plenty. If so convenient, the preference should be given to this place; as it is situated in a bay, with regular soundings toward the shore, the anchorage must be more sheltered than Bally Road.

Sumbawa coast. SUMBAWA COAST, lining the East side of the strait, is all high rugged land close to the sea, and the islands fronting it, are steep to. Ships working through the strait, with steady breezes, may stand over toward these islands, in order to benefit by the strength of the tide; but with light baffling winds, they should keep in soundings near the Lombock side, to anchor if necessary, or when the tide is unfavorable. In the southerly monsoon, the wind blows generally strong through the strait from the southward during the day, abating in the evening, and veering a little off the Lombock shore. In the northerly monsoon it is variable, and not so strong; for southerly breezes sometimes prevail at the South entrance of the strait in this season, when the wind is blowing from the northward into the North entrance. The best time to weigh from Bally road, when ships are bound to the southward in the southerly monsoon, is early in the morning, in order to get clear out with the land breeze, before the strong wind begin to blow into the entrance of the strait, about 9 or 10 A. M.

Directions for sailing through the strait.

Winds.

The low islands lining the N. W. part of Sumbawa, called by the natives Timor-Yung,

* Captain Clarke, of the True Briton, was informed, that the villages in Allass Strait, and those contiguous, are named by the natives as follows, counting from the southward. On the Lombock shore, Palaba, Peejow, Loboagee, Seegarra, Lombock, and Soudeeang. The Rajah, called Gastinora Mataran, by the natives, resides at Mataran in the interior, near the other side of the island; but his proper name, is said to be Anacaogo.

The villages on the Sumbawa side, are named Geravee, Tellewang, Satalow, Allass, Laboo, Padee, and Sumbawa the chief town. The inhabitants of these islands have a particular language of their own, and write on the leaves of the palm tree, with an iron style. At Bally town, they have several proas, and send 1 annually to Malacca or Penang. Both the islands of Lombock and Sumbawa, abound with a hardy breed of small horses.

are in lat. 8° 21′ S., lon. 116° 57′ E. their northern extremity, and there are villages on the easternmost of them. The True Briton and Royal Charlotte, were drifted close to these islands, by an easterly current during a calm, on the 13th of September, 1797, and had no soundings until within a cable's length of the reef that skirts them. When the True Briton first got ground, 50 fathoms, she anchored with the kedge, and had 30 fathoms under the stern, with the nearest part of the reef bearing S. by E., a large ½ cable's length distant, extremes of the low islands from S. by E. ½ E. to W. by S. ½ S., eastern extreme of Sumbawa East, and Lombock Peak W. ½ S. The first cast the boat had between the ship and reef was 25 fathoms, the next 10, then 5 fathoms, and suddenly 3 feet near the reef. A deep bay is formed by these islands, the points of which bear nearly East and West of each other; but the bottom being coral rock, renders this part of the coast unsafe to approach with light airs and easterly currents. From the numerous huts seen, there appeared to be a populous village, but although the natives seemed friendly and desirous of bartering their poultry, &c. there was some reason to think that landing might not be altogether safe.

Geo. site of the islands contiguous to the N. W. part of Sumbawa,

should be avoided in light winds.

SUMBAWA BAY, and TOWN, lie to the eastward of these islands that line the N. W. end of Sumbawa, and to the S. Westward of Pulo Majo, or nearly South from Flat Island: the bay is large, open to the North and N. W. with reefs projecting from the land on each side, and a good harbour stretches inland, between the reefs at the West side of the entrance. The soundings decrease quickly from 40 to 20 or 15 fathoms, near the shore at the bottom of the bay, or S. Eastern part, where the town and river of Sumbawa are situated in about lat. 8° 27′ S., lon. 117° 24′ E. The Nonsuch from Bengal, anchored here, in April, 1791, but this place is seldom visited by English ships. Tumbora Mountain, or Mount Aron, lies to the eastward of Sumbawa Bay, in lat. 8° 9′ S., lon. 117° 43′ E. by chronometers from Batavia.

Geo. site of Sumbawa.

Geo. site of Tumbora Mountain.

BIEMA, or BIMA BAY, situated near the N. E. end of Sumbawa, stretches to the southward 7 or 8 leagues into the island, with soundings of 60 or 80 fathoms at the entrance, decreasing to 20 and 15 fathoms near the town of Bima, which is built on the eastern shore of the bay, and where the Dutch generally have a resident: this place is seldom visited by English ships. The bay is bounded at the entrance, by Rugged Point to the East, in lat. 8° 11′ S., lon. 118° 51′ E., and Rocky Point to the westward, in lat. 8° 8′ S., lon. 118° 36′ E.

Bima Bay.

Geo. site.

The Maria Reygersbergen, frigate, on the 6th of April, 1805, anchored in Bima Bay in 26 fathoms black sand, the East point of the bay bearing N. 33° E., the N. W. point W. 29° N., the Battery W. 25° S., Watering Place W. by S., and observed in lat. 8° 23½′ S., lon. 118° 44′ E. from Batavia by chronometers.

Betwixt Sumbawa Bay and Bima Bay, there is another large and deep bay on the North coast of Sumbawa, not frequented by ships.

SAPY STRAIT, formed betwixt the East end of Sumbawa and the West side of Comodo, or Rat Island, is considered safe, and has been much frequented by the Company's ships. It is, however, not so convenient nor so spacious as Allass Strait, for the tides are more rapid in the narrow part, where some rocky islets separate the strait into different small channels. The northern part is divided into 2 principal channels by the Island Gilibanta, which is of considerable size, having a peak near the centre, and there are some small islands in the eastern channel, betwixt it and Comodo. Brief directions for approaching this strait from southward, have been given in Volume First of this work, but a particular description now becomes necessary.

Sapy Strait.

The eastern channel is little frequented, being the leeward side of the strait in the westerly monsoon, thought to be destitute of soundings, and Comodo being high steep land, with the tide of ebb setting toward its steep rocky coast. The route through, is nevertheless, shorter

than that by the other channel to the westward, and appears to be safe: it might be adopted occasionally, when ships are not in want of water, and bound out to the southward, during the S. E. monsoon; but in all other cases, the western channel between Gilibanta and Sumbawa, should be chosen.

Goonong Apee.

GOONONG APEE, or GUNONG-APEE, distant about 3 or 4 miles from the N. E. point of Sumbawa called Table Point, and bounding the North entrance of the strait on the West side, is high, formed of a large mountain, the summit of which terminates in 2 high peaks, 1 to the S. E. the other to the northward. The high sharp lava peak, on the East part of the island, generally appears double, and is situated in lat. 8° 11′ S., lon. 119° 5′ E. by the mean of many good chronometers.* Betwixt this island and Gilibanta, and a considerable way to the southward, the strait is wide and clear, until it becomes contracted by the islands to the eastward of Sapy Bay. There is a safe passage either to the North or southward of Goonong Apee.

Geo. site.

Sapy Bay, islands and channels adjacent.

SAPY BAY, is bounded on the South side of the entrance, by Middle Island and an adjoining island off its West end, and the long island Sintodo to the eastward. Close to the East point of Sintodo, an islet and 2 rocks are situated, called Booroosa Caper by some navigators. There are also some rocky islets off the East point of the Island Camara, which lie about 5 miles southward of Sintodo, bounding the West side of the entrance of the strait in coming from the eastward; and the opposite side is bounded by the S. W. point of Comodo, and its adjoining island. MATACOTE, is a small peaked island about 4 or 5 miles to the N. E. of Sintodo East point, having several rocks to the northward, called sometimes Little Matacote, and others to the westward, called Black Rocks: Matacote is in 1 with Goonong Apee Peak bearing N. 26° W. The track to the eastward of Matacote is followed at times, but the passage to the westward, between the Black Rocks and Booroosa Caper, is preferable; for, by keeping along the western side of the strait, in coming from the northward, a ship is enabled to anchor under Sintodo during the flood tide, from whence she can weigh with the first of the ebb, and work out of the strait. And a ship coming from the southward, by hauling close round Sintodo, will preserve the weather shore, avoid the low rocks, and get sooner into anchorage.

A coral flat lines the North side of Sapy Bay, but the South side is safe to approach; the soundings decrease regularly from 26 or 28 fathoms at the entrance, to 17 or 18 fathoms in the upper part of the bay, about ½ a mile below rocky island. The bay here, is about 1¼ mile wide, where ships may occasionally anchor, and procure supplies of buffalos, goats, fowls, sweet potatoes, cocoanuts, &c., from Sapy town, situated by the side of a creek at the S. Western extremity of the bay. The natives will barter these articles for fire arms, coarse cutlery, red and blue handkerchiefs, and empty bottles; but single ships ought to be guarded against any treachery from these people, particularly if they anchor far inside, and are not well armed.

Anchorage.

Ships generally anchor in 24 or 25 fathoms, at the mouth of the bay: the Dorsetshire in 25 fathoms, had Goonong Apee Peak bearing N. ½ E., Sintodo from E. by S. to S. E. by S., Middle Islands S. ½ W. to S. W., northern extreme of Sumbawa North, Gilibanta N. E. by E. to E. by N. ½ N., and Matacote E. ¼ S., observed lat. 8° 29½′ S. The Coutts, when moored in 28 fathoms, on the 23d of December, 1800, had Lava Peak on Goonong Apee

* The lon. of Goonong Apee Peak, seems to be well established; Mr. Brown, chief supercargo to the Company, at Canton, made it in lon. 119° 4′ E. and 12° 13′ West of Point Pigot by 3 chronometers, or in lon. 119° 5′ E. Captain Torin, of the Coutts, made it also in 119° 5′ E. by chronometers from St. Pauls and from Point Pigot in 1800. Captain Clarke, of the True Briton, in 1796, made it in lon. 119° 6′ East measured from Middle Island in Salayer Straits; and other navigators, have made it nearly in the same longitude, by chronometers. The Dutch frigate, Maria Reygersbergen's chronometers, place it in lon. 118° 59′ E. measured from Batavia.

bearing N. 2½° E., Gilibanta Peak E. 25° N., Black Rocks E. 4° S., Matacote E. 6° S., the rock off Sintodo E. 9° S., Middle Island from S. 4° W. to S. 23° W., Island off it S. 30° W., Sapy Bay Point S. 49° W., long boats at the watering place in Mango Bay W. 10° S., Water Bay Peak W. 18° N., and Water Bay Island N. 22° W. about 1½ mile distant. At this time, the brook in Mango Bay was found to be very much reduced, to what it was in October on a former voyage, and the water brackish till 150 yards from the beach. In Water Bay, the spring was nearly as usual. In Rees' Bay, the supply was scanty, and the taste of the water rendered unpleasant by a quantity of tree leaves in the well. But there being a large squadron of ships at this time, in company with the Coutts and Dorsetshire, they watered at all these places, and also at a considerable brook, found to the southward of Captain Rees' watering place.

Rees's and Britannia's Bay.

REES' BAY, and BRITANNIA'S BAY, are formed by the projections of the Sumbawa shore, to the northward of Sapy Bay, at either of which, ships may procure wood and water. The watering place in the cove of Rees' Bay, bears from Booroosa Caper W. 5° N., but the best anchorage is in 20 fathoms mud and sand, with it bearing about E. 2° S., to avoid the shoals inside, and along the North side of the bay. The southern part of this bay is clear of danger, but there is a bank of 6½ fathoms sand and shells at the North part, with 18 and 19 fathoms mud and sand, all around; and inside, there is a coral spot, having on it only 10 or 11 feet water.

The Watering Pond in Britannia's Bay, bearing from Booroosa Caper W. 29° N., is about 20 yards from high water mark, and small casks which can be carried by 2 men, are best for watering at any of these bays. As the soundings are irregular, with rocky bottom in the middle of this bay, a ship intending to water here, should anchor in 25 fathoms, about 1 mile off its northern point; for a rocky shoal stretches from the southern point of the bay nearly to Island Point, with some parts of it almost 2 miles off shore. As the points on this part of Sumbawa, have small spits projecting from them, and the bottom being generally hard sand to the northward of Island Point, a bower anchor is required to secure a ship here in the westerly monsoon.

Soundings.

There are no soundings near Gilibanta, the outer verge of the bank where 40 to 50 fathoms are got, stretches nearly in a direct line from Booroosa Caper to Goonong Apee, decreasing pretty regularly to 20 fathoms in most parts, from ½ to a ¼ mile off the Sumbawa shore. No soundings are got in the South part of the strait, to the South of Matacote, but within ½ a cable's length of it there is 20 fathoms, and 25 fathoms between it and the low rocks adjacent, deepening to the northward.

Tides.

Hereabout, the bottom is all rocky with overfalls, and rapid tides setting past Matacote 4 and 5 knots per hour during the springs, produce strong ripplings resembling breakers, which are alarming to strangers, and the eddies may sometimes render ships ungovernable. As the low rocks are nearly even with the water's edge, the track between them and Matacote is not so safe as that betwixt the Black Rocks and Booroosa Caper, by keeping near Sintodo, and rounding its eastern part about the distance of a mile; for some ships have been drifted nearly on the rocks, by the rapid tides.* Although the tides set rapidly through the middle

* The Northumberland bound to China, rounded Matacote very close with a spring flood and brisk N.W. wind, in February, 1783: when the low rocks were seen from the mast-head, she bore up against the tide, and with difficulty cleared them about the distance of a cable's length. Returning from China in September, 1796, the Britannia (with a fleet of 10 sail) was passing Matacote about 1 mile to leeward, with a southerly wind and strong ebb tide; the helm was then put up, and the wind brought on the quarter, but the ship not stemming the tide, and judging by its rapidity that there was a clear channel, she passed betwixt the middle rock and Matacote. Two ships of the fleet, passed to the eastward of Matacote, but all the others went between the Black Rocks and Booroosa Caper. The Cornwallis, in August, 1796, bound to the southward, found the tide setting very strong to the S. E. on her approach to the westernmost rocks; and after tacking within 100 yards of them, she stood S. by W. close to a range of breaking water, which extends 2½ miles to the southward of the rocks. This seems

of the strait, the flood to the northward, and the ebb to the southward, they become much weaker within the verge of soundings near the N. Eastern part of Sumbawa, and there is very little tide in the bays. It is high water in Britannia's, and in Water Bay, about 1 hour on full and change of the moon, and the rise of tide is said to be 11 or 12 feet.

and winds. The winds are variable in Sapy Strait, forming a kind of land and sea breezes, those from the westward prevailing in the westerly monsoon; and during the opposite season, strong breezes blow into the strait from the southward, great part of the day.

To sail through Sapy Strait, and from thence toward the Straits of Salayer. Ships bound to the northward, after passing along the western side of Sapy Strait, should borrow toward the East side of Goonong Apee, which is bold to approach. If the route through Salayer Straits is to be pursued, care must be taken to keep well to windward in crossing over for Salayer; because, a strong easterly current generally prevails in the westerly monsoon, when the wind blows with much strength. From this cause, several ships have fallen to leeward of the islands fronting the South end of Salayer, at different times, and were obliged to pass along the East side of that island; whilst others have steered to the eastward on the north side of Flores, which is preferable.

Ships steering from Salayer's Straits, toward the Strait of Sapy in the southerly monsoon, ought to endeavour to fall in with the N. E. point of Comodo, situated in about lat. 8° 22′ S., and 32½ miles East of Goonong Apee Peak by chronometers.

Mangerye Strait. MANGERYE STRAIT, formed between the West end of Flores and the numerous small islands that front the East side of Comodo, is 7 or 8 leagues in length, and not frequented; for the clusters of islands with which it is studded, render it an intricate navigation. The S. W. point of Flores, situated in about lat. 8° 50′ S., forms the eastern

Aligator Bay. boundary of this strait in coming from the southward; and Aligator Bay is 4 or 5 miles to the N. W. of that point, being only about ¼ mile wide, with soundings of 50 fathoms at the entrance, decreasing inside to 20 and 15 fathoms, mostly sand and coral. Mr. Dalrymple anchored here, in the Cuddalore schooner in 1761, and found fresh water in the cove round

Mangrove Harbour. the bluff point that forms the East side of the bay. The cove called Mangrove Harbour, is about 1½ mile to the northward of Aligator Bay, being a ¼ mile wide at the entrance, with soundings of 17 to 12 fathoms near the southern shore, decreasing to 7 or 8 fathoms inside. Here, it is about ⅛ of a mile wide, and there is a fresh water stream, at the N. E. extremity. Close to the entrance of this cove, lies an islet, contiguous to a Saddle Island; and about 2 miles outside, West Island is situated, having a peak on it: there is a coral shoal of 1 fathom, inside of this island, with 30 and 40 fathoms water between it and the shore of Mangerye.

## 3d. DESCRIPTION OF FLORES; ISLANDS, DANGERS, AND STRAITS ADJACENT; WITH SAILING DIRECTIONS.

Flores Island. FLORES or MANGERYE, is an extensive island, being about 70 leagues in length East and West, and 14 or 15 leagues broad in some parts. From the S. W. point, near Aligator Bay and the entrance of Mangerye Strait, the South coast stretches East and E. by S. to about lon. 121° 30′ E., which is the southernmost part of the island, and situated in

Geo. site of the South coast. lat. 8° 58′ S. or 9° 0′ S. The coast from hence, stretches East a considerable way, and then E. by N. and E. N. E. to the Volcano Mountain of Lobetobie, which stands near the S. E. point of the island. This coast is steep to, no soundings being found, except in some

to have been only a strong rippling occasioned by the rapid tide, which they apprehended might be a reef; and seeing deep water to the southward, they hauled in for it, worked close round the N. E. point of Sintodo with a very strong gale at S. E., and passed the eastern rock off Camara Island, about the distance of a cable's length.

of the bays very near the shore; and there appear to be no dangers projecting far out. Tower Island, fronting the coast at a small distance, and situated about 12 leagues to the eastward of the S. W. point of Flores, rises almost perpendicularly from the centre in a high peak. To the eastward of this island about 15 leagues, there is a high volcano mountain in the vicinity of the coast, and a remarkable peak about 8 or 9 leagues to the westward of the S. E. extremity of Flores. The channel betwixt Sandalwood Island and the South coast of Flores, is about 10 or 12 leagues wide, and clear of danger.

SANDALWOOD ISLAND, or JEENDANA, has been partly described in volume first of this work; but a farther description is necessary, particularly of the bay near the East end of the island. The eastern extremity of this island, is in lat. 10° 0′ S., lon. 120° 35′ E. by mean of chronometers and lunar observations taken in the Thames, Buccleugh, Carnatic, and Glatton; and it is thought to be bold and safe to approach in this part. Geo. site of the East end of Sandalwood Island

The channel formed betwixt its eastern extreme, and New Island, Banjoan, and Savu, is wide and clear of danger.

The coasts of Sandalwood Island, are generally steep to, and no soundings are got until near the shore in some places; but there is anchorage in the large bay, formed on the N. E. side of the island.

PADEWAWY, or BARINGS BAY, in about lat. 9° 37′ S., situated on the N. E. part of Sandalwood Island, about 4 or 5 leagues West from its N. Eastern extremity, affords anchorage in the western part, off the mouth of Padewawy River; but no soundings are obtained until within 1½ or 1 mile of the shore. H. M. Ships Leopard and Thames, steering to the eastward along the North side of Sandalwood Island, on the 28th of December, 1790, saw a fine sandy bay near the N. E. end of the island; they hauled in, had no ground 50 fathoms about 1½ and 2 miles off shore, but on approaching nearer, got soundings. The Leopard anchored in 15 fathoms, with the extremes of the land bearing from E. by S. to the N. W. point of the bay N. N. W. ½ W. The Thames anchored in 16 fathoms coarse sand, and moored with the kedge, the extremes bearing from E. by S. to N. W. by N., the mouth of the river West, distant ½ a mile, which is a good birth, and convenient anchorage during the westerly monsoon. These ships remained here 4 days, wooded and watered conveniently with their launches in the river, and each of them was presented with a buffalo from the chief of the place. Padewawy Bay.

The Dutch charts, place a shoal stretching out from the East point of this bay, which ought to have a birth; a great swell rolls into the bay at times during the easterly monsoon, in which season, the anchorage here, appears to be inconvenient.

The southernmost point of Sandalwood Island, is in lat. 10° 22′ S., lon. 120° 20′ E. by chronometer; and to the westward of this point, there is a group of isles surrounded by shoals, which extend 3 or 4 leagues from the coast, consequently, dangerous to approach in the night. Geo. site of the South point of the Island.

THE ROUTE along the NORTH COAST OF FLORES, is sometimes adopted by ships going from Sapy Strait toward the Pitt's Passage; it is also frequented by Dutch ships, bound from Batavia to Amboina or Banda, late in the season, in March or April; likewise when returning in June, July, and August. Captain Forbes of the Sibbald, bound to Amboina, after reaching Boele Comba at the South part of Celebes, finding the currents running constantly through the Straits of Salayer to the westward, steered to the southward on the West side of Salayer, and then proceeded along the North coast of Flores, where the current was found to set East and N. Eastward while near this coast, from the 17th to the 20th of April, 1816. When this route is to be followed, it is prudent to keep within a moderate distance of the coast of Flores, in order to avoid the islands and dangers to the north- Route along the North coast of Flores.

Geo. site of the S. E. Schiedam Island.

ward. The westernmost of these, are the SCHIEDAM ISLANDS, 1 of which in lat. 7° 1′ S., lon. 120° 28′ E., has been mentioned in a preceding section, marked " Directions for sailing from China, outside of the Philippine Islands, and through the Pitt's Passage, into the ocean." The other, or S. E. Schiedam Island, is in lat. 7° 12′ S., lon. 120° 56′ E., by observations taken in the Boddam; they are both of considerable size, and may be discerned 7 or 8 leagues.

Geo. site of Kalatoa, adjoining Islands.

KALATOA* ISLAND, in lat. 7° 12′ S., lon. 120° 40′ E., by observations taken in the Boddam, distant about 15 leagues eastward of the S. E. Schiedam Island, is of moderate height, and may be seen 7 leagues; it is the largest of a group of islands, having reefs projecting from some of them, and a shoal on which the Alfred struck in lat. 7° 9′ S., about 2 leagues off the N. W. part of Kalatoa, and near Great Crompa. The northern islands of the group, are called Great and Little Crompa: the southern 1 called Panjang or Madoo, lies close to the southward of Kalatoa, having a reef projecting a great way out from its western side, and there is a channel betwixt it and the South end of Kalatoa about 2 or 3 miles wide, with soundings in 1 part of 6½ to 12 fathoms, as experienced by the Boddam in passing through. About 6 or 7 leagues eastward of this channel, lies a small island called the Post Horse, having a reef extending about 1½ mile from its eastern side.

A caution to ships sailing from Allass or Sapy Straits in blowing weather.

As a caution to ships approaching these islands in blowing weather, it *may be* useful to describe the dangerous mistake of the fleet in 1796, which caused the unfortunate loss of the Ocean. This fleet worked out of the northern entrance of Allass Strait on the 31st of January, and cleared it at 4 P. M., then blowing hard at N. W. with much rain, which weather continued during the 24 hours. At noon, by indifferent observations they were in lat. 7° 16′ S., lon. 119° 50′ E., having experienced about 60 miles of easterly current in 20 hours.

From hence, they steered N. E. 7 miles, and saw the N. W. Schiedam Island to the eastward about 4 leagues distant, hauled to the S. E. and southward, to give a birth to it and the other Schiedam Island, which was afterward seen: they were under close-reefed topsails at this time, the wind blowing hard at W. N. W. with rain and severe squalls, and unfortunately these islands were *mistaken* for the Postillions. From having the southern extreme of the islands bearing East at 5 P. M. they steered S. by E., S. E., and E. S. E., 21 miles, and E. N. E., N. E., and North 24 miles, to round them, when at 2 A. M., land was seen N. N. E. very close. They immediately wore, but some of the ships perceiving breakers a-head, wore again, set courses, and continued working till day-light. The Alfred and Woodford struck, but fortunately backed off; the Canton, Boddam, and Taunton Castle, kept off the islands and reefs by carrying a press of sail; but not being able to round the southern Island Madoo, and the reef that projects from its western part, some of them were forced to push through betwixt that island and Kalatoa in the morning, and found the channel safe.

The Ocean was driven by the strong current, on the reef lining the West side of Kala-

* This island is of considerable size, and called Old Klaut by the Dutch; it and the neighbouring islands are inhabited by a perfidious race, who continued for 14 days after the loss of the Ocean, to promise daily to Captain Patton, their Proas to carry his crew to Amboina, having plenty of these vessels on the East side of the island. They appeared however, only to wait a convenient opportunity to massacre the crew of the Ocean, but fortunately this was prevented, by keeping a strong guard and a good look out in the night, and having some 6-pounders mounted close by the tents. When Captain Patton was certain of the treachery of these people, he resolved to take some Proas by force, but to pay a reasonable sum for the use of them, in transporting his crew to Amboina. With this view, an armed party was sent to the East side of the island, and in the act of seizing the Proas, they were attacked by the natives, had 7 men killed and wounded, and killed about the same number of the Malays, but were obliged to return without the Proas. A Macassar man was at the island at this time with some Proas, who agreed to take part of the Ocean's crew to Amboina; and 2 days after the affray, Captain Patton with his crew, embarked in the night into the Proas and the Ocean's long boat, unperceived by the natives. They left this inhospitable island on the 19th of February, and arrived on the 28th at Amboina.

toa, and unfortunately became a wreck before day light, notwithstanding every effort was made to keep off, by carrying a press of sail. The reefs contiguous to these islands, appear to be steep to, as no soundings were got, excepting a few casts in the channel betwixt Kalatoa and Madoo.

To the southward of the Schiedam and Kalatoa Islands, there are 2 dangerous shoals, with some islands adjacent to the North coast of Flores, now to be described. Shoals to the northward of Flores.

JAAGER'S REEF, or BANGALORE'S SHOAL, situated at a considerable distance off the N. W. part of Flores, appears to be in about lat. 7° 40′ S., although the true position of this danger is not correctly known. The ship Bangalore, bound from Amboina toward Allass Strait, struck upon this shoal at 9 P. M., on the 12th of April, 1802; the anchor was carried out with a whole cable, but from the steepness of the coral bank, the anchor appeared only a-peak, and the ship soon bilged and became a wreck. At day light, the shoal was found to extend North and South about 3 miles, and in breadth 2 miles, dry at low water on the western part, with rocks resembling proas under sail. From the wreck on the shoal, Flores or Mangerye bore from S. W. to E. S. E. distant 10 or 12 leagues, an island near Flores forming like a dome, S. S. W. 7 or 8 leagues, and an island supposed Schiedam, N. W. 8 or 10 leagues. If this was the S. E. Schiedam Island, the shoal seems to be situated about 18 miles to the eastward of it, by the bearing and estimated distance, or in about lon. 121° 13′ E.; whereas, if the island seen bearing S. S. W. was Rusa Raji, the shoal ought to lie about 7 or 8 miles to the eastward of its meridian, or in lon. 121° 46′ E. Geo. site of Bangalore's Shoal.

The Malays who navigate hereabout, describe this shoal to be situated to the northward of Rusa Raji, which island is formed of a high gaped hill at the eastern part; but the western part being rather low, is called ***Cakke***, or the ***Foot***, by these people, which they say should not be sunk from an elevation of 10 or 12 feet (the height of their proas) in passing to the northward of the island, in order to avoid the foregoing shoal.

ANGELICA'S SHOAL, was seen by the ship of this name, on the 3d. of July, 1801, in her passage from Amboina, and the following extract is from Captain Don's journal. Saw a shoal bearing from S. by W. to W. N. W., bore up to the northward of it; on our approach, three proas at anchor on the shoal, weighed and made sail. This shoal is about 4 miles in extent, of circular form, the North and South ends of it nearly dry: it is in lon. 122° 18′ E., bearing from Kalatoa S. E. ¾ E. distant about 8 leagues. If the position of Kalatoa, by the observations taken in the Boddam, is correct, this bearing and distance would place Angelica's shoal in lat. 7° 35′ S., lon. 121° 58′ E.; but if the island seen was the Post Horse, mistaken for Kalatoa, (which might ***probably*** happen) the shoal in such case, ought to be situated in about lat. 7° 40′ S., lon. 122° 18′ E., agreeing with the position assigned to it by the Angelica. Geo. site of Angelica's Shoal.

A SHIP proceeding to, or from Sapy Strait, by the route along the North coast of Flores, ought to borrow within a few leagues of this coast, in order to avoid these shoals which lie to the northward. It is proper to remark, that the North coast of Flores, (like that of Sumbawa) including Ombay, are considerably to the southward of the parallel of lat. 8° S. Directions for sailing along the North coast of Flores.

The Castlereagh, Captain Gardner, from Bombay, proceeding by the route along the North coast of Flores, observed at noon on the 30th of December, 1808, in lat. 8° 8′ S., lon. 121° 12′ E. by chronometer, the Island Russa Raji then in sight bearing E. by S. ½ S. From this situation, they steered S. E. by E. 27 miles, E. S. E. 3 miles, and passed between that island and the coast of Flores, in a fine channel about 4 leagues wide, but got no soundings.

Geo. site of Rusa Raji.

RUSA RAJI, called LUSARADY by the Dutch, in lat. 8° 17′ S., lon. 121° 38′ E. by chronometer, when bearing North about 4 or 5 miles distant, appeared bold to approach, of a high round sloping aspect, covered with trees to the summit, and lights were seen upon it in the night: on either side of this island, the channel is equally safe, but the S. E. part is lined by a reef, with a single tree on it. The frigate Maria Reygersbergen made it in lat. 8° 14′ S., lon. 121° 39½′ E. by chronometer from Batavia.

The Sibbald, passed to the northward of it, on the 19th of April, 1816, and made it in lat. 8° 18′ S., lon. 121° 38′ E. by chronometers. On the 18th at noon, the observed lat. was 8° 9′ S., lon. 121° 17′ E., when the centre of Rusa Raji bore S. S. E., distant 7 or 8 leagues, and a remarkable peak or smoking volcano on Flores S. by W. On the 19th at noon, the observed lat. was 8° 7′ S., lon. 121° 53′ E. by chronometer, when the body of Rusa Raji bore S. 50° W. distant about 6 leagues, and the body of Rusa Linguete E. ½ N., which bears from the former N. E. by E. ¼ E., same time saw land bearing about N. by E., supposed to be the island Madoo, where the Ocean was lost, or the Port Paart of the Dutch.

Geo. site of Rusa Linguete.

RUSA LINGUETE, called ROSAGALET by the Dutch, in lat. 8° 5′ S., lon. 122° 0′ E.,* the centre by the Sibbald's chronometers, and in lon. 122° 6½′ E. by the Maria Reygersbergen's chronometer from Batavia, is of considerable height and extent, having the appearance of a saddle in some views; off its N. E. part, lies a small island, and from the S. W. and South part, a dry sand and reef projects about 2 miles. The Castlereagh, after passing on the South side of Rusa Raji and Rusa Linguete, had the latter bearing North at 2 A. M., distant about 2 leagues, and from hence steered N. E. ¾ N. 16 miles till day light, when Rusa Linguete bore W. by S. ½ S., and Flores Head E. ¼ S.

Directions.

The Sibbald passed on the North side of these islands, the channel outside, being equally safe as that between them and Flores, but the inner channel is preferable in the night, on account of the Bangalores, and Angelica's Shoals. Ships, however, which sail along the North coast of Flores in the night, ought not to borrow too close, on account of several small islands, stretching along it nearly from Flores Head westward, and opposite to Rusa Linguete; among which, the Three Bastards, and Duffer or Forsaken Island, lie in lat. 8° 14′ and 8° 16′ S., and 7 or 8 leagues to the westward of Flores Head, by observations taken in the frigate Maria Reygersbergen.

Three Bastards, and Forsaken Islands.

Geo. site of Flores Head.

FLORES HEAD, or IRON CAPE, in about lat. 8° 5′ S., lon. 123° 2′ E., by the Castlereagh's observations,† is high bold land, terminating the N. Eastern extremity of Flores, and bounding the West side of the approach to the strait of the same name, when coming from the northward. This cape, is situated about 11 or 12 leagues to the East of Rusa Linguete; the Castlereagh, from having the island last mentioned, bearing North at 2 A. M., distant about 2 leagues, steered N. E. ¾ E. 16 miles to day light, the Island Rusa Linguete then bore W. by S. ½ S., and Flores Head E ¼ S.

On the 20th of April, 1816, in the Sibbald at noon, observed lat. 7° 47′ S., lon. 122° 50′ E. by chronometers, Flores Head, the centre half, bearing S. ½ W., Lobetobie Peak S. E. by S., Sebrao Peak S. E. ¼ E., and Pulo Comba E. ¼ N.

Strait of Flores.

STRAIT OF FLORES, is bounded on the West side, by the eastern part of the Island Mangerye or Flores, and on the East side by the Islands Solor, and Adenara or Sabraon;

* The Castlereagh supposed it to be in lon. 122° 26′ E. when passing in the night, which appears to be too much easterly. Both it and Rusa Raji are inhabited.

† The Sibbald's chronomter placed it in about lon. 122 48′ E., and the frigate Maria Reygersbergen made it in lon. 122° 46′ E.; but their observations appear to be too much westerly; the mean of the whole 122° 52′ E. is probably near its true longitude.

and it extends nearly N. N. E. and S. S. W. 10 or 12 leagues. The South entrance, formed between the Island Solor and the S. E. part of Flores, is sometimes called the strait of Lobetobie; and the northern entrance, formed betwixt the Island Adenara and the N. E. part of Flores, is called Larantuca Gut by the Portuguese, where they had formerly a settlement of this name, at the foot of the adjoining high mountain.

In some parts of the strait, where a ship may occasionally anchor, the bottom is in general rocky; and the tides being very rapid in the northern entrance, which is very contracted, large ships ought not to pursue the route through this strait, except in a case of necessity. The fleet of 6 ships,* bound from Europe to China, did however pass through it in 1797-8, from the journals of which, the following remarks are chiefly taken; particularly, from the observations made by Captain Williams of the Thames.

Geo. site of the south entrance.

South entrance of the strait of Flores, situated in lat. 8° 40′ S., lon. 123° 3′ E., cannot be mistaken by any person who has previously seen it. A stranger intending to proceed into this strait during the westerly monsoon, should after passing Sandalwood Island, haul in for the coast of Flores, and approach it pretty close when within 5 or 6 leagues of the entrance of the strait.

This part of Flores consists of a chain of high mountains, and in coasting along to the eastward, a high round isle will be discerned, which is situated directly in the mouth of the strait, and must be passed on the West side. This isle is steep to, having no ground near it at 90, or 95 fathoms; a little to the eastward of it, there is a ledge of rocks generally called SUNKEN ROCKS, part of which is visible above water; and other islets and rocks, front the South end of Solor to the eastward of the strait. At a small distance inside of the high round isle, or outermost isle, 2 other rocky islets form the passage, which are seen when the strait is open: they bear E. N. E. and W. S. W. from each other, distant ½ a mile or more, and soundings of 40 to 30 fathoms were got by the fleet, when passing in mid-channel between them; but the common passage is on the East side of these 2 islets.

Sailing Directions.

The point of Flores forming the West side of the entrance of the strait, is remarkable, being of green aspect, resembling a gunner's quoin, and is situated at the foot of the high volcano mountain of Lobetobie; which may be discerned at a great distance, and is generally seen burning in the night. A reef projects a considerable way from the green point of Lobetobie, with 9 fathoms water close to it, according to the Dutch charts; which ought to have a wide birth, and the lead kept going.

After passing the 2 inner islets, the fleet carried soundings from 40 to 27 fathoms, decreasing regularly toward the shore; and in the evening, when 4 or 5 miles inside of the islets, they hauled in for the solor side of the strait, and anchored in from 15 to 35 fathoms, coarse sand, shells, and coral. The Glatton in 28 fathoms, had the Middle Isle in the South entrance of the strait bearing S. by W. ½ W., the other 2 about equal distance on each side, volcano of Lobetobie W. ½ S., and the high mountain of Larantuca N. ½ E.: observed lat. 8° 30′ S. by the Glatton, 8° 32′ S. by the Carnatic, and the tide set regularly N. by E. and S. by W. about 2½ miles per hour. In attempting to land on Solor, the natives were found hostile, firing some arrows from the bushes at the boats; but they *probably* considered the ships to be Dutch, who carry away the inhabitants when opportunity offers, to sell as slaves at Batavia.

From the above anchorage, the fleet weighed at noon on the 26th of December, 1796, steered N. E. by N. and N. E. ½ N. in soundings 25, to 35 and 40 fathoms; then no ground, until they hauled in to anchor, near the eastern or Adenara shore, where they got 26 fathoms about ¾ mile off, decreasing fast to 20 and 18 fathoms.

The Glatton anchored in 17 fathoms, Larantuca Peak N.W. by W., centre of the northern entrance of the strait N. N. E., the low point of the Larantuca shore which forms the

* Glatton, Buccleugh, Carnatic, Thames, Walmer Castle, and Royal Charlotte.

passage N. by E. ½ E., the point of Adenara on the other side N. E. by N. 3 or 4 miles distant, which has cocoanut trees to the water's edge, Adenara South point S. by W. 3 miles, and the N. W. point of Solor which forms the South side of the strait of that name S. S. W. This is a kind of small bay where the fleet lay, the anchorage in it bad, for the bottom is mostly coral rock and coarse sand: the tides were found to be weak, with eddies near the shore; but farther out in the stream, they set N. N. E. and S. S. W. from 4 to 6 miles per hour, and rise 8 or 9 feet. The middle of the bay is the best ground, for 2 ships of the fleet lost anchors by the rocky bottom, which occasioned the loss of bowsprit and other damage to the Buccleugh, from the Walmer Castle driving foul of her. This accident detained the fleet here, until the 4th of January, 1797. The Glatton's boat found 8 fathoms water close in shore abreast of the ship, but a shoal spit projects from the point about ⅝ mile to the S. E., with only 2 fathoms on it about 1 or 1½ cable's length off shore.

Larantuca Village.

LARANTUCA VILLAGE, situated on the opposite shore of Flores, can supply 2 or 3 ships with refreshments, such as goats, hogs, fowls, fruits of various kinds, a few buffalos and some turtle: fresh water may also be procured from wells here, and near the mouth of the gut. In return for these articles, the natives will receive gunpowder in small quantities, musket-balls, glass bottles, wine glasses, white linen cloth, and all sorts of coarse cutlery. They collect here, small quantities of wax, bezoar, and ambergrease, which is sent in small proas to Timor and other places, and purchased by the Chinese traders.

The inhabitants of this village, generally hoist a Portuguese flag, and *probably* may accompany it with an English jack, when any of our ships are passing through the strait.

Anchorage.

They, as well as the inhabitants of the village of Adenara, profess christianity, having been converted by the Portuguese missionaries, above a century ago.

The anchorage in Larantuca Road, in 15 or 16 fathoms, about 1 or 2 cable's lengths off the shore, to the southward of the village, is thought to be safer than the anchorage on the Adenara side, but the bottom is generally coral and sand, throughout the strait.

Strait of Solor.

On the West side of the strait, there are 2 bays with an island in each, and the strait of Solor is formed on the eastern side, betwixt the Island Solor and Adenara, which is a passage of 3 or 3½ miles wide, leading to the Dutch Gut. There are soundings in this passage, by keeping toward the North side of Solor, but a spit projects from its N. E. point; and when the shore is closely approached, there are overfalls from 4 to 9 fathoms. Large Dutch ships, sometimes adopt this passage, after coming into the South entrance of the strait of Flores, and proceed out to the northward through the Dutch Gut. The Jane, after coming along the North coast of Flores, entered Flores Strait from the northward, passed through Solor Strait, then to the southward between the Islands Solor and Lomblen, in April, 1706, on her route to Timor.

All these islands, being high and mountainous, ships passing through the straits formed by them, are subject to calms, and sudden strong gusts of wind of short duration.

To sail through Larantuca Gut.

From the above anchorage, near Larantuca, the fleet weighed about noon on the 4th of January, with the first of the flood, which is the best time to weigh: having a light breeze at S. W., they drove through Larantuca Gut under topsails, with boats a-head towing, keeping nearly in mid-channel, or rather nearest to the eastern shore. The soundings in passing through were from 17 to 20 fathoms, but some ships nearest the shore, had only 10 fathoms.

The tides are very rapid, and set nearly direct through the gut, which is only ½ or ⅝ of a mile wide. It appears dreadful to strangers, although the channel seems safe, and there is 7 fathoms water close to the point on the eastern side; yet, considering the rapidity of the tides in this very contracted channel, it seems not an advisable passage for large ships.

When ships coming from the southward, approach the outer point seen on the Flores shore, they should be careful to haul well over to the eastern side of the gut in passing that

point, because the tide setting strong round it, will be liable to horse them into the bight of the Flores shore outside of the point, which is shoal all over.

ADENARA VILLAGE, is situated on the N. W. side of the island of this name, a little way outside of the gut of Larantuca. Refreshments, and grain for stock may be procured here; ships coming from the northward, may steer for, and anchor off this village, where they may get out the boats, and take every precaution requisite, before they proceed into the gut. Adenara Village.

To the N. W. of Adenara, on the West side of the channel leading to the gut, and nearest to the Flores shore, lies the small low island Serbette, which ought to have a good birth on account of its surrounding shoal spots, some of which are dry. When this island bore N. W. by W., the village of Adenara bore S. E. by S., distant 3 or 4 miles, and Pulo Comba N. E. $\frac{1}{2}$ E.

PULO COMBA, or CAMBAY,* is a high round island about 2 miles in extent, bearing N. E. $\frac{1}{2}$ E. from the North entrance of the strait of Flores or Larantuca Gut, distant 11 or 12 leagues, and nearly North from the Dutch Gut. Captain Heywood, made it in lat. 7° 49′ S., lon. 123° 41′ E. or 4° 34′ West from Amboina Flagstaff by chronometers. It is an excellent guide for ships coming from the Banda Sea, when bound through the Strait of Flores, or along the North coast of this island, and may be passed on either side at any convenient distance, being bold to approach; but ships ought to pass it on the East side, in steering for the strait during the easterly monsoon. Geo. site of Pulo Comba.

ZEMANRO GUT, formed between the N. E. part of Solor Island and the S. W. end of Lomblen, is 3 or 4 miles wide, and seems to be a safe passage. On the East side of the entrance, there is an islet with some shrubs on it, situated about $\frac{3}{4}$ of a mile from the S. W. point of Lomblen, called the Devil's Rock; and a hole is seen through it, when bearing N. W. $\frac{1}{2}$ N. or N. W. by N. The northern part of this passage, called the DUTCH GUT, formed between the N. W. end of Lomblen and the eastern part of Adenara, has been already mentioned in describing the Strait of Flores. Islets and shoals project from the N. E. point of Adenara, and bound the West side of the channel in passing out to the northward. There are soundings in some parts of the Zemanro and Dutch Guts, but although this passage is said to be frequented by large Dutch ships, it is little known to English navigators, the Jane being the only ship of this country, known to have passed twice through Zemanro Gut, in her route to, and from Timor. Zemanro Gut, and Dutch Gut.

The N. E. point of Solor and S. W. point of Lomblen, which form the Gut of Zemanro, bear N. $\frac{1}{2}$ W. and S. $\frac{1}{2}$ E. from each other, distant about $2\frac{1}{2}$ leagues.

LOMBLEN, is an island of considerable extent N. E. and S. W., consisting mostly of high bold land; and the high conical peak at the N. W. part, which may be seen 16 or 17 leagues, is in lat. 8° 12′ S., lon. 123° 52′ E. by chronometer from Amboina. The South coast extends nearly East and West about 5 leagues, and both the North and South coasts, seem bold to approach. Geo. site of Lomblen Peak.

STRAIT, or GUT OF ALLOO, bounded by the Island Lomblen to the N. W. and westward, and by Pantar to the eastward, is thought to be a safe passage, but destitute of soundings. It is frequented by the Junks and vessels which trade from Macassar to Timor, Strait of Alloo.

* Called North Hattery, by the Dutch frigate Maria Reygersbergen, which she places in lat. 7° 58′ S., and 48 miles East of Flores Head; and another island, situated at the entrance of the Dutch Gut, and called South Hattery, by this ship, she made in lat. 8° 7′ S., and 19 miles East of North Hattery by chronometers.

and by those also, that trade from Macao to the same place. Dampier passed through it in 1688, and again in 1700; but being little known to English navigators, the following remarks may be useful, which were communicated by that able, and experienced officer, Captain Peter Heywood, of the Royal Navy.*

Geo. site of the N. E. Point of Pantar.

PANTAR ISLAND, extending N. E. and S. W. about 8 leagues, is of considerable height, having a peak at the eastern part somewhat elevated above the rest of the island. The N. E. point is in lat. 8° 10′ S., lon. 124° 25′ E. by chronometer from Amboina, and the land to the westward indents into 2 small bays between it and the N. W. point, which forms into a little peak. About 3 or 4 miles N. by E. from the N. W. point of Pantar, there is situated a small round island, called Green Island, remarkable by its colour, and being destitute of trees. FLAT ISLANDS, about 2 or 3 miles to the westward of it, are 2 low isles, with some straggling bushes on them; they lie North and South near each other, and seem connected by a spit of sand or rocks. The North entrance of the Strait of Alloo, formed between these islands and the East point of Lomblen, is here 5 or 6 miles wide: this point, situated in lat. 8° 14′ S., lon. 124° 0′ E. by chronometer from Amboina, forms in a low spit of sand, with a reef or coral bank projecting under water about ½ a mile from it; at the distance of 1 mile off it, no ground was got with 120 fathoms line. About 5 or 6 miles South from this point, East Island is situated nearest the Pantar side of the strait, and has a level aspect. MIDDLE ISLAND, bearing S. W. by W. 5 or 6 miles from East Island, is of considerable height, resembling at the western part a gunner's quoin: the passage on either side of this island appeared safe, and is about 4 or 5 miles wide from shore to shore; but the opening between East Island and Pantar, seemed very narrow.

Geo. site of the East point of Lomblen.

Strait of Pantar.

STRAIT, or GUT OF PANTAR, formed betwixt the island of this name and the West end of Ombay, extends N. N. E. and S. S. W. about 8 leagues, and is little frequented by English navigators; for it is considered to be rather intricate, and not so safe for large ships as the Strait of Alloo. From the observations made by Captain Heywood, when passing the northern and southern mouths of this strait, he has been enabled to give the following remarks.

Geo. site of the N. W. end of Ombay.

The N. West end of Ombay, in lat. 8° 9′ S., lon. 124° 27′ E., by chronometer from Amboina, is high bold land, and the distance from it to the N. E. point of Pantar, is about 5 miles; but in the northern part of this strait, 3 islands are situated. The northernmost of these, called North Island, is low, and on the middle of it there is a small hummock. Haycock Island, bearing S. 5° W. from the former, rises upward in the form of a cone or haycock; and the other, called High Island, or Centre Island, is much larger and nearly of the same form, but terminates in a double peak, as high as the West end of Ombay or the peak of Pantar. The North part of High Island, is distant about 2 leagues to the southward of North Island; it is situated rather nearer the Pantar side, than to Ombay; and the land

* Captain Heywood, sailed from Amboina late in February, 1803, in H. M. S. Dedaigneuse, bound to Hindoostan. He stood to the S. Westward, made Velthoen's Island, and entered the strait of Alloo with a leading wind on the 3d of March, with the intention of proceeding through it. Having rounded the East point of Lomblen about 1 mile distant, and got into the channel betwixt East Island and Lomblen, he meant to have passed along the Lomblen side of the strait, to the westward of Middle Island; or to the eastward of the latter, if laid off by the wind. But as night approached, the wind veered to S. W. with squalls and rain, and having a brig in tow, he thought it highly imprudent to beat about in a dark night, in an unexplored narrow strait, probably subject to strong tides; he therefore steered out of the strait, and proceeded round the North and East sides of Ombay, then to the S. W. betwixt it and Timor. This navigator concludes, with the following remark, relative to the strait of Alloo. "With a leading wind, I have no doubt that the passage through this strait is perfectly safe, and I should prefer it to the strait of Pantar at this season, being farther to windward, much wider, and the land on each side not so high; consequently, less liable to calms, squalls, and irregular currents of wind or water." Captain Heywood, took many angular bearings whilst in the vicinity of these straits and islands, and constructed a chart of them.

abreast of it, forms a bay, on both sides of the strait. There is a deep inlet to the N. E., which apparently separates the N. W. part of Ombay from the body of the same land. South Island, situated in the southern entrance of this strait, is high, and seen to the westward of High Island when it bears S. 11½° W. The proper channel through it, is betwixt the islands in the North part of the strait and the Ombay shore, and out to the southward on either side of South Island, but the passage to the West of the latter, is preferable.

The narrowest part of the channel, between the N. E. point of High Island and the North point of the inlet that stretches into Ombay, is nearly 2 miles wide, and it becomes wider to the southward. Captain John Wales, of the Company's Marine, went through this strait in 1798; he passed close to the N. W. part of Ombay, which is lined by a reef, and carried a fair wind until abreast of High Island: then succeeded light baffling airs from southward, and night coming on, he worked through betwixt Ombay and High Island; when 3 or 4 miles to the southward of the latter, the S. E. wind set in steady, with which he steered out to the S. S. Westward between South Island and the Pantar shore. No ground was got with from 20 to 40 fathoms of line in passing through the strait, and strong eddies were experienced off the S. E. part of High Island.

Geo. site of Ombay.

OMBAY, or MALLOOA, extends nearly E. by N. and W. by S. about 16 or 17 leagues, and from the numerous dwellings seen among the hills, it appears to be well inhabited. This island is high land, but most so, at the eastern part; its coasts all round, appear bold and safe to approach, and the East point is situated in lat. 8° 17′ S., lon. 125° 15′ E. or 3° 0′ West from Amboina by chronometers.

## 4th. WETTER, TIMOR, AND OTHER ISLANDS CONTIGUOUS TO THE OMBAY PASSAGE; WITH SAILING DIRECTIONS.

Geo. site of Wetter, and the adjoining islands.

WETTER, is a high bold island extending E. N. E. and W. S. W. about 20 leagues, clear of danger, and safe to approach within 1 or 2 miles in most places. Its East point is situated in lat. 7° 46′ S., lon. 126° 54′ E.; DOG ISLAND is in lat. 7° 41′ S., lon. 126° 3′ E., or 2° 12′ West from Amboina by chronometers, and is a small isle about 2 miles off the N. W. end of Wetter. PULO BABY, in lat. 8° 5′ S., distant about 5 miles off the S. W. end of Wetter, is a high island, bold to approach on the West side; but the passage betwixt it and Wetter is said to be unsafe, and the western shore of the latter, being lined by foul ground as far to the northward as Dog Island, ought to be kept at a moderate distance.

Pulo Cambing.

PULO CAMBING, or PASSAGE ISLAND, extending N. N. E. and S. S. W. about 3½ or 4 leagues, is of considerable height, with a peak; its North point bears S. 30° W. from Pulo Baby distant 2 leagues, and the channel is clear between them, by giving a birth to the North end of Pulo Cambing, where foul ground projects out about 1 mile. The South point of this island is in lat. 8° 21′ S., lon. 125° 39′ E. by chronometer from Amboina; and its S. W. point bears East from the East end of Ombay, distant about 20 miles, this being the breadth of the Ombay Passage, formed between them, which is very clear, the islands on both sides being steep to, without soundings.

Geo. site of Kisser.

KISSER, in lat. 8° 0′ S., lon. 127° 7′ E. by chronometer from Amboina, is a small island, distant about 7 leagues N. N. W. from the East end of Timor, and nearly the same distance to the S. Eastward of the East end of Wetter. It is bold to approach, having a town, fort, and small bay on the western side, where a ship may occasionally anchor near the shore during the easterly monsoon, and procure water and other refreshments.

Roma. ROMA, in about lat. 7° 39′ S., bearing East, nearly 12 leagues from the N. E. end of Wetter, is an island of considerable size and height, with several small isles contiguous; and there is said to be anchorage at the S. E. part, in a small bay under the high land.

Geo. site of Timor. TIMOR, extends about 80 leagues nearly E. N. E. ½ N. and W. S. W. ½ S., the S. W. point being in lat. 10° 23′ S., lon. 123° 30′ E., and the East end in lat. 8° 21′ S., lon. 127° 15′ E., or 60 miles West of Amboina Flagstaff by chronometers.* Inland, this island is formed of high undulating mountains, but in some places near the sea, it is of moderate height. The South coast, although little frequented, is safe to approach within a moderate distance in most places, and there are generally soundings near the shore, and anchorage in some of the bays. In coasting along this side of the island during the night, a ship ought to keep at a moderate distance from the points of land; because some of those that front the S. W. and southern parts, have reefs projecting from them to a small distance. It is also proper, not to stretch far out to the southward, on account of the Sahul Banks, mentioned in Volume First of this work.

To sail to the southward in the westerly monsoon. A ship coming from Amboina, or from any other part of the Banda Sea, in the westerly monsoon, and bound to the westward by the southern passage, ought to use every means to pass on the North side of Timor; for if she fall to leeward, and be obliged to pass round the East end of that island, she will find great difficulty in beating to the westward betwixt it and the coast of New Holland; where strong winds from W. N. W. to W. S. W., with squally weather and a heavy sea, may be generally expected from November to April. If, notwithstanding every precaution, a ship fall to leeward, it seems advisable to work to the westward along the South coast of Timor, and afterward pass through the Strait of Semao, betwixt it and Rotto. For by keeping to the northward of the Sahul Banks, near the land, a ship will *probably* have the wind and sea more moderate than in the offing; and she will not be embarrassed with the dangers that lie to the southward.

The South coast of Timor, stretches nearly N. E. by E. and S. W. by W., formed in many parts, of low land fronting the sea; and the hills from thence, rise in gentle acclivities up the country. The hills and low land, are generally covered with trees close to the sea, except in some parts which appear cultivated. Several ships in sailing along this coast, have found it clear of danger, with many small inlets, and soundings of 15 to 25 fathoms within 1 on 1½ mile of the shore, in some places.

South coast of Timor. The South side of Timor, is inhabited by the natives, who are generally found to be inoffensive, and more hospitable than the northern Malays. On the opposite side of the island, the Dutch and Portuguese have several settlements, where ships may touch and procure refreshments.

Geo. site of Dilly. DILLY, or DIELY, in lat. 8° 35½′ S., lon. 125° 40′ E., or 2° 35′ East from Amboina by chronometer, is a small Portuguese settlement on the North side of the island, where ships proceeding through the Ombay Passage, sometimes stop for supplies.

From the low situation of the town under the high land, it is with difficulty perceived until nearly approached, when coming from the northward. There is a bluff point that projects out to the eastward of it, by which it may be known when within 4 or 5 miles of the shore; or at this distance off, with the peak of Pulo Cambing bearing N. ½ E., the houses and flagstaff will be visible.

This is not an advisable place for large ships to go into, unless from necessity; for the entrance of the harbour, or inner road, is only about 1½ or 2 cables' length in width, being formed between 2 coral reefs; and inside, there is not much room. The sea breaks on these

* The geographical positions of most of those islands, are given from the observations of Captain Heywood, corroborated by those of Captain Flinders, and other navigators.

reefs at ¾ ebb, and they are dry at low water, stretching parallel to, and distant about 2 miles off shore. In crossing the bar between them, the Canada had 5, 6, and 7 fathoms, and 14 fathoms inside about a cable's length off the town, with the extremes of the bay from W. N. W. to N. E., and the extremity of the coral reef that shelters the harbour N. N. W. ½ W. Inside, there is a small patch nearly in the fair way or centre of the harbour, having on it only 12 feet water. Anchorage.

The Princess Charlotte* grounded on this patch, after the pilot anchored her in 7 fathoms about ¼ mile off shore with Dilly Flagstaff S. E. ¼ E.; being too far to the westward, she shot a-head and grounded, but was soon hove off by running out the kedge anchor.

At a moderate distance outside of the reefs, there is anchorage in from 30 to 40 fathoms. Pilots will come off, by making the signal, if you intend to run inside. The passage between the reefs is to the westward of the fort, near the western point of the bay; the instant a ship hauls round the reef, sail should be reduced, and she will shoot into an anchoring birth of 12 to 14 fathoms muddy bottom. There is a large tree on the beach, which should not be brought more easterly than S. E. by S. From the proper anchorage Pulo Cambing bears N. 9° E. to N. 14° W., Pulo Baby N. 16° E., West end of Wetter N. 23° E., Flagstaff of Dilly S. 59° E., and the extremes of the bay from N. 45° E. to N. 73° W.

Fine buffalos, hogs, and vegetables, may be got here, also rice and poultry; but the latter are neither cheap nor abundant. The sea wind setting in regularly during the day, renders this place easy of access in the S. E. monsoon; and a ship may run out speedily, with the land wind in the morning. The tides are irregular in the neaps, high water 1½ hour on full and change of the moon.

About 9 leagues to the West of Dilly, there is a point of land in lat. 8° 39′ S., lon. 125° 13′ E., which forms the narrowest part of the passage between Timor and the S. E. part of Ombay, and is here, 5 or 5½ leagues wide. From this point, the general direction of the coast is between S. W. ½ W. and S. W. by W. ¾ W. 26 or 27 leagues to Pulo Batto, a small white cliff'd isle in lat. 9° 16′ S., lon. 124° 5′ E., which lies 3 or 3½ leagues off shore, and sometimes abounds with turtle. Geo. site of the point that forms the Ombay Passage. Geo. site of Pulo Batto.

There are several villages and anchoring places on the North coast of Timor, betwixt Dilly and Pulo Batto; but in many parts, no ground can be got until very near the shore.

BATTO-GADY, in lat. 8° 57½′ S., lon. 124° 55′ E., is a Portuguese settlement where refreshments may be got, with good anchorage in the easterly monsoon; it being situated in a bay to the S. Westward of the point mentioned above. There is a rock fronting this place, with soundings near it. The Star, bound from Amboina to Europe, anchored when calm in 15 fathoms, with Batto-Gady flagstaff in one with the rock bearing S. S. W. 2 or 3 miles distant. With a light westerly breeze soon after, she weighed, made a tack, and stood in S. by W. ½ W. for the town; then anchored in the road in 11 fathoms sand and mud, with the bluff point N. 24° E., the rock N. 32° E., the western extreme W. 17° S., and the flagstaff of Batto-Gady S. 35° E., off the beach abreast of the fort about 200 yards. She remained here 3 days cutting wood, filling up her water, and procured some stock by permission of the governor, and sailed on the 13th of August, 1801. Geo. site of Batto Gady.

LEFFOUW ROAD, situated about 8 leagues to the eastward of Pulo Batto, is an open anchorage, and the low point on the West side, separates it from Tulycaon Road, or Bay. In this bay, near the Village Occuse, a ship may anchor in 22 fathoms, about 2 cables' lengths from the shore, with the houses bearing nearly South, Leffouw Point about 2 miles Leffouw Road.

* This ship left Amboina, on the 16th of June, 1802, bound to Europe, and being very crank, put into Dilly on the 20th; here she remained 7 days, received 72 tons of ballast, and 10 buffalos. She made Dilly Flagstaff in lat. 8° 34½′ S., lon. 125° 36′ E. by chronometer from Amboina, or 4 miles more westerly than Captain Heywood's position of it by the same means.

to the E. N. E., and Pulo Batto 6 leagues to the westward. It appears to have been in Tulycaon Bay, the Taunton Castle anchored on the 1st of September, 1797, and sailed on the day following, after receiving 15 buffalos and other refreshments. She anchored in 40 fathoms, about 2 cables' lengths off shore, with the extremes of the bay from E. by N. to W. by S. ½ S., the flagstaff S. ½ E., observed lat. 9° 12′ S. The ship Prince Regent, on the 6th of April, 1816, sent 2 boats twice to the village of Occuse in passing, and they brought off 18 fine buffalos and some water, while the ship stood off and on. There is good anchorage to the westward of the village, 50 fathoms about 2 miles off shore, and 25 fathoms 1 mile from it, blueish clay, where the Echo and Rebecca, Whalers, had anchored at this time, and procured supplies.

Tulycaon Bay.

Sutarana Road.

SUTARANA ROAD, is all rocky and foul ground, and lies round the point to the S. Westward of Tulycaon Bay; the anchorage is in 30 to 40 fathoms about 1½ cable's length off shore, with the houses bearing S. by W., Pulo Batto N. W. westerly, 2½ or 3 leagues, easternmost extreme N. E. by E., and the western extreme of the bay W. ¼ S., distant 1½ mile.

The North coast of Timor is uniformly high a little way in the country sloping down in many parts toward the sea. In lat. 9° 41′ S. a remarkable peak is situated on the West part of the island, which bears S. by E. a little easterly from Pulo Batto.

Currents and monsoons.

THE CURRENTS are very irregular, and sometimes set strong through the channel betwixt Ombay and Timor, but generally to the eastward during the westerly monsoon, and to the westward in the opposite season. Close to the shore of Timor, a kind of tides are sometimes experienced. In April and May, the current sets commonly to the westward, and if leaving Amboina in April, you should steer direct for Pulo Cambing, as the current will set you to S. Westward; but it frequently sets strong to the eastward about the latter part of the easterly monsoon, in July, August, and September. In October, it sometimes sets strong to the westward, for in October, 1813, the Albion could not get to the eastward on account of a westerly current, and she was obliged to pass through the strait of Flores to the northward. The sickly season here, is during the easterly monsoon, when strong land breezes prevail in the night.

Geo. site of the N. W. point of Timor.

The N. W. point of Timor, in lat. 9° 24′ S., lon. 123° 55′ E., is distant 4 or 5 leagues to the S. W. of Pulo Batto; and the coast from thence, turns sharp round to S. S. W. and South, extending nearly in these directions to the entrance of Copang Bay, having a small bay in the interjacent space.

Copang Bay.

COPANG BAY, situated near the S. W. extremity of the island, is very extensive, and the town of Copang built on the South side of it, is the chief settlement on Timor belonging to the Dutch, where they have a fort called Concordia.

There are 2 passages into the bay, both of which are safe, and lead to the anchorage. The western passage, is formed betwixt the Island Semao, and Sandy or Turtle Island, which is a small isle in the middle of the entrance of the bay, having a sandy beach and a reef projecting from its western side, 2 miles to the W. S. W. The sea breaks on this reef, and it is partly dry at low water; the island has also a reef stretching from it about ½ a mile to the North and southward, with 30 fathoms close to its eastern verge.

To enter it by the western channel.

To sail in by the western channel, a ship ought to borrow toward the Semao shore, or by keeping about mid-way between it and Sandy Island, the reef which projects from the latter, will be avoided. When abreast of this island, she may steer direct for the town of Copang, but no soundings will be got until within 1½ or 1 mile of it.

Eastern channel, is formed between Sandy Island and a small isle covered with trees, which lies close in with the N. E. point of the bay; and this is considered the best channel,

there being soundings between the islands of 25 to 38 fathoms, where a ship may anchor occasionally during a calm.

In steering to the S. Eastward for this channel, soundings of 60 fathoms sand and coral are got, when Sandy Island is bearing S. S. E. 1 mile distant, and the small isle E. N. E. 3 or 4 miles, the depth decreasing toward the latter. About ½ a mile farther in, there is 50 fathoms sand, and 38 fathoms about ½ a mile from Sandy Island; come no nearer it, on account of the surrounding reef. Steering in, to the eastward of this island, Copang flagstaff will be seen bearing about South, and in sailing toward it, the water will deepen from 32 to 47 fathoms soft mud. When the fort is approached within 1½ mile, the depth will decrease to 39, 31, 29 fathoms sand, and 21 fathoms mud, as fast as the lead can be hove, which is a good birth to anchor, with the flagstaff S. S. E. ½ E. 1 mile, the river's mouth S. S. E. ¼ E., Sandy Island N. ½ W. about 4 miles. But the best anchorage is with the flagstaff S. by E., in 20 to 25 fathoms blue mud, about ½ a mile off shore; and it is proper to moor immediately. To sail in through the eastern channel.

FORT CONCORDIA, is in lat. 10° 8½′ S., lon. 123° 35′ E. by chronometer from Amboina; and Captain Flinders made the flagstaff in lat. 10° 9′ S., lon. 123° 35¾′ E. Variation 0° 37′ E. in 1803: although there is very little stream of tide in the road, it rises 10 or 12 feet perpendicular, and flows till 10¼ hours at full and change of the moon. Geo. site of the Fort.

By application to the governor, a ship may get every assistance here, and refreshments of fruits, vegetables, buffalos, hogs, and poultry. Boats go into the river, and fill their casks above the bridge, where the water is always good; but sometimes, it is brackish below. Refreshments.

This is a good place to touch at in the easterly monsoon; but the bay is open to the heavy swell, which rolls into it during the strength of the westerly monsoon, rendering the anchorage sometimes unsafe. Ships, may, however, anchor under Semao, completely sheltered from the severe squalls which blow from N. W. to S. W.: here, the Dutch ships lie during the strength of the westerly monsoon, but the bottom is generally foul.

SEMAO, is an island of considerable extent, and moderately elevated, fronting Copang Bay and the S. W. end of Timor, from which it is separated by a narrow, but navigable channel, with soundings of deep water in it. This island has a similar aspect to the adjacent land of Timor, but it is not quite so high. Semao.

ROTTO, or ROTTE, extends a considerable way to the S. Westward of Timor and Semao, being 12 or 14 leagues in length N. E. and S. W., the S. W. end reaching to about lat. 11° 2′ S., lon. 122° 55′ E.; and it is rather a low island of undulating appearance, much larger than Semao. In some parts soundings are got near its shores, with small isles adjoining; and at the western part, a Dutch Manuscript chart, places a harbour or inlet extending inland to the eastward, the entrance of which is formed by shoals on each side, and seems intricate; but 4, 5, and 6 fathoms are marked between the shoals, and 8 to 13 fathoms inside of the harbour, secure from all winds. Geo. site of Rotto.

BOOCA BAY, in lat. 10° 46′ S. and in about lon. 123° 20′ E., situated on the South side of Rotto, is sheltered from all winds except those that blow from S. W. The ship Abercromby of Bombay, about 1200 tons burthern, bound to China, after being dismasted to the southward of Sandalwood Island, anchored in Booca Bay in 21 fathoms soft bottom on the 14th of January, 1812, after having sent the boat to sound an opening or bay, which was seen from the offing. In the journal, it is called a bay or cove, with good anchorage, and no appearance of danger; at anchor in 21 fathoms water, she was about 3 cables' lengths from the shore, and the Village of Booca is situated at the head of the bay, where a good watering place was found. The chief of the place afforded to the Abercomby, a supply of buffalos, pigs, goats, deer, poultry, beeswax, and honey, and the island abounds with a Booca Bay.

small breed of horses. These articles were obtained in barter for beads, red cloth, large knives, gun-powder, muskets, pistols; and the natives prize highly gilt buttons.

After refitting in part, and having obtained water and refreshments, she sailed from hence on the 26th of January for Copang Bay; and she was afterward obliged to proceed to Sourabaya to get new masts, which could not be obtained at Timor.

the strait adjacent. The strait of Semao, separates Rotto from Semao and the S. W. point of Timor; and it is a safe passage, with soundings of 40 to 60 fathoms in some places. The North end of Rotto and S. W. point of Timor, bear from each other N. ½ E. and S. ½ W. distant 3 or 4 leagues; and the western part of the strait, is about 2 leagues wide between Rotto and Semao, where there is an isle contiguous to Rotto, and another off the S. W. point of Semao.

Geo. site of Savu. SAVU ISLAND, is about 7 leagues in length East and West, low to seaward, with hills of moderate height in the centre, and situated in lat. 10° 37′ S. lon. 122° 0′ E.* as stated already in vol. first of this work. At each extremity of the island, there are low sandy points with heavy breakers, which should not be approached in the night. There is said to be a small bay on the S. W. side of the S. E. point of the island, where ships may anchor in the westerly monsoon; but Saba Bay on the N. W. side, is better known, and it affords safe anchorage in the easterly monsoon. The Endeavour, anchored in this bay, about 1 mile off shore, in 38 fathoms water clear sandy bottom, with the North point of the bay bearing N. 30° E. distant 2½ miles, and the S. W. point or westernmost extremity of the island W. 27° S. The refreshments procurable here, are buffalos, sheep, hogs, fowls, limes and cocoanuts. The Dutch have residents on all these islands, and they are subject to the government of Copang. Rotto is said to produce sugar, and most of the islands have a breed of small horses.

Betwixt the West end of Savu, and the small island Banjoan situated near it, there is said to be a passage; and the channel between the latter and New Island, is very safe.

New Island. New Island has been stated in vol. first of this work, to lie in lat. 10° 40′ S., but the observations taken in the Panther, make it in lat. 10° 46′ S., and 10 or 11 leagues to the W. S. Westward of Savu.

Adjoining channels. The channel formed betwixt these islands and the East end of Sandalwood Island, is 16 or 17 leagues wide and clear of danger. The other channel, bounded by Savu on the West side, and by Rotto and Semao to the East and S. Eastward, is about the same breadth and equally safe; and according to circumstances, either of them may be adopted by ships bound to, or coming from the Ombay Passage.

Islands to the eastward of Timor. THE CHAIN OF ISLANDS, which extend from the East end of Timor nearly to New Guinea, being seldom seen by European navigators, are very imperfectly known; but they are frequently visited by large Macassar Proas, and others, which carry on a considerable trade with several of those islands; and which also, annually visit the coast of New Holland, near the Gulf of Carpenteria, to procure the sea slug, called beech de mer, for the China market.

Geo. site of Pulo Jackee. PULO JACKEE, or NOOSSA NESSING, is a small isle situated about 3 miles off the East point of Timor in lat. 8° 19′ S., lon. 127° 18′ E.: the Dutch charts mark soundings around this end of Timor, and anchorage on the N. W. side of Pulo Jackee. Betwixt this island and Lettee, the next island to the eastward, the channel is about 9 leagues wide, and clear of danger.

* This longitude of Savu, by the observations of Captain Heywood, agreeing with chronometers from Amboina, corresponds also with the observations of other navigators. Captain Cook in his first voyage round the world, made it 30 miles more to the eastward; but after his arrival in this country, the lunar tables were found to require a correction of 2 minutes, or 30 miles of longitude westerly, at the time the observations were taken at Savu.

LETTEE, is a high island of considerable extent, and its western extremity is in lat. 8° 16′ S., lon. 127° 46′ E., bearing from Pulo Jackee about E. ½ N., distant 9 or 9½ leagues. There is a small village at the N. E. part of the island, with soundings off it, where a ship might anchor in from 10 to 20 fathoms water in a case of necessity, in order to procure some refreshments from the inhabitants; but the ground is rocky, and unfavorable for anchorage. Geo. site of Lettee.

MOA, is the next large island to the eastward of Lettee, being separated from it by a small channel, and other islands stretch eastward to Ceremata or Sermatta, which together with Lettee, extend nearly E. by N. and W. by S. about 35 leagues. These islands are mostly high, and there is thought to be safe passages between some of them; but the cluster of isles off the West end of Ceremata, are surrounded by rocks and shoals. Moa.

DAMME, or DAMMA, in about lat. 7° 10′ S. is a large island, distant 15 or 16 leagues to the N. N. Westward of Ceremata, having smaller islands to the South and westward of it: there is a bay on the East side of the island, and another on the North side called William's Bay, where some Dutchmen generally reside. TAUW, situated about 8 leagues to the E. N. Eastward of Damme, is a small island; NILA, distant about 6 or 7 leagues farther in the same direction, is much larger, having a bay on the South side, and a hill on the East side, said to be a volcano. CEROWA, in about lat. 6° 10′ S., lon. 129° 53′ E., lies in a N. N. E. direction from Nila, and is said to have anchorage on the North side; but most of these islands are steep to, and the bottom is generally rocky in those few places where soundings are obtained. Damme, and other islands. Geo. site of Cerowa.

BABBER, in about lat. 7° 25′ S., about lon. 130° 40′ E., is a large high island, encircled by others of small size; some of which, lie 4 or 5 leagues off. One of these, called Weetang, fronts the West end of Babber, and there is a bank of 5½ to 10 fathoms water between them, where a vessel may anchor and be sheltered from westerly winds by the high land of Weetang; and by the high land of Babber, from easterly winds. There is also anchorage at the East end of Babber, with the N. E. point of the island bearing about North, the South point S. by W., and the entrance of a fresh water river will then bear S. W.; but the bottom is generally foul about this island, and those in the offing are steep to, without soundings. Geo. site of Babber.

TIMOR LAUT, is the southernmost large island between Timor, and New Guinea, its southern extremity being situated in about lat. 8° 15′ S., lon. 131° 50′ E. by the observations of Captain Cook in his first voyage round the world, from whence, it extends nearly N. N. E. about 25 leagues, and is generally high land. To the West and northward, it is fronted by numerous islands of various sizes, with anchorage in some places; and a chain of islands stretch from the N. E. part of Timor Laut, in a N. N. Easterly direction to the islands called the Keys. Geo. site of Timor Laut.

KEYS, are 3 large islands adjacent to the S. W. coast of New Guinea, with many small isles contiguous to them; and a chain of isles stretch from thence in a N. Westerly direction, to the S. E. extremity of Ceram. The keys.

ARROE, or ARROW ISLANDS, (like the whole of this Archipelago) are very imperfectly known. Captain Cook, made the southern extremity of the Great Arroe in lat. 7° 6′ S., lon. 135° 0′ E.; from thence, it extends nearly N. by E. about 36 leagues, or within 12 or 14 leagues of the S. W. coast of New Guinea. It is intersected with deep inlets in the western side, which seem to separate it into different sections; and it is fronted by many small isles at the N. W. and eastern sides. From the southern extremity of the Geo. site of the Arroe Islands.

Arroe Islands, soundings extend a considerable way to the westward; and in an easterly direction, there are moderate depths of 16 to 35 fathoms as far as the coast of New Guinea, where the great bay is formed to the northward of Cape Valsche. This cape, is situated in about lat. 8° 26′ S., about lon. 137° 28′ E., and forms the S. W. extreme of New Guinea. Contiguous to the Arroe Islands, there are anchorage in several places, and they abound with some articles of refreshments, and others of trade; but the natives of these islands, and those of the adjacent coast of New Guinea, are inhospitable to strangers, and must be carefully watched.

Geo. site of the S. W point of New Guinea.

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# *MONSOONS, WINDS, and WEATHER, and ISLANDS in the MOLUCCA, and BANDA SEAS; with SAILING DIRECTIONS.*

Monsoons among the Molucca Islands.

N. W. MONSOON, generally commences among the Molucca Islands early in, or about the middle of November, but seldom blows strong till late in December, continuing until the end of March; then after an interval of calms, light variable winds, squalls and rain, during the month of April the S. E. monsoon gradually sets in, and strengthens in May, continuing until October, when the winds become variable.

In the track comprehended between Celebes and Gillolo, and sometimes to the eastward of the latter, as far as the coast of New Guinea, the winds prevail from N. N. Westward in the N. W. monsoon, and from S. S. Eastward during the opposite season. This is more particularly the case in the Molucca passage, where the winds blow nearly right through, prevailing more from the North than from the West point in the N. W. monsoon, and more from the South than from the East in the other season. Therefore, at the Molucca Islands, the former is called the *northerly monsoon*, and the other the *southerly monsoon*. But the winds are subject to great changes during both monsoons, in the vicinity of the extensive islands which form the boundaries of the Pitt's Passage; whereby, ships that sail well, may generally gain ground against the monsoon, in any direction.

In the Banda Sea, and near New Holland.

IN the BANDA SEA, or that space bounded by Bouro and Ceram to the northward, and by Timor and Timor Laut to the southward, the N. W. monsoon becomes a W. N. W. one, for the winds prevail more from the West, than from North. And they prevail more from East than from South, during the S. E. monsoon. In the space betwixt Timor and New Holland, the wind often blows at W. S. W. or West during the westerly monsoon, and in both these seas, it is accompanied with hard squalls, dark gloomy weather and rain, which occasions a constant current to the eastward. The atmosphere over the N. W. coast of New Holland, being greatly rarefied by the influence of the sun upon that dry barren soil, attracts the current of air from the ocean toward its shores. Therefore, when the sun is in the southern hemisphere, there is no S. E. trade experienced near the northern coast, for the westerly monsoon extends to lat. 15° or 16° S., where the winds begin to draw to S. Westward; and in a higher latitude, they veer to S. S. W. and South, blowing along the coast in the night, or inclining toward it in the day. But as the distance is increased from the coast to the westward, they will be found to draw gradually round into a S. E. trade.

S. E. monsoon in the Banda Sea.

S. E. MONSOON, which commences in the Banda Sea in April, is well set in by the end of May, at Amboina, Ceram, and Banda; and with it the rainy season, at those islands.

But it is remarkable, that the rains do not extend to the Island of Bouro, although it is not more than 20 leagues to leeward of Amboina; for at Bouro, the fair weather commences with the same monsoon that brings forth rain and unsettled weather about the islands to windward of it.

In the strength of the S. E. monsoon, the winds blow sometimes strong through between Bouro and Ceram. Captain Waterman, in the ship Volunteer, bound to Amboina, in 1812, beat several days against a strong S. E. wind, under the lee of Manipa and Kelang, and was obliged on the 17th of July, to run into Cajeli Bay, the ship being only able to carry her foresail and close reef'd maintopsail.

Molucca Islands.

THE CHAIN of ISLANDS, adjoining to the West coast of Gillolo, were formerly considered as the principal spice islands; but since the Dutch destroyed the trees, this valuable article of trade is not procurable here. Ships that touch at these islands, may, however, be supplied with refreshments, such as goats, sheep, poultry, sago, with various sorts of fruit and vegetables.

Geo. site of Ternate.

TERNATE, the northernmost of these islands, is of small extent, but high, with a fort on the East side called Fort Orange, where the chief town is situated. The Scaleby Castle, bound to China by the eastern passage, on the 27th of November, 1814, anchored in 22 fathoms coarse sand and gravel, with the flagstaff of Fort Orange N. W. by N., and moored with the stream anchor to the northward. During the night, 1 of the most violent explosions of the volcano occurred, ever known at Ternate. Water was only procurable in small quantities at this time, as 4 or 5 butts drained the wells. This place is in lat. 0° 49′ N., lon. 127° 30′ E., and the anchorage is near the shore abreast of the town. The Dutch frigate Maria Reygersbergen made the road in lat. 0° 48′ N., lon. 127° 29½′ E., and the volcano mountain in lat. 0° 48′ N., lon. 127° 13½′ E.

The king of Ternate, was formerly considered as the sovereign of all the Molucca Islands adjacent, until they became tributary to the Dutch. There is a small isle about 2 miles off the North end of Ternate, called Kiery, with rocks fronting it to the northward. Both Kiery and Ternate have a pleasant aspect, being cultivated and well inhabited.

Tidore, adjoining islands, and dangers.

TIDORE, is nearly of the same size as Ternate, situated to the S. Eastward, and separated from it by a safe channel: the N. E. end of the island is in lat. 0° 46′ N., lon. 127° 34½′ E., the mountain in lat. 0° 40′ N., lon. 127° 22½′ E.; and the South extremity in lat. 0° 34′ N., lon. 127° 24½′ E., by the Maria Reygersbergen's observations. The anchorage at Tidore is on the East side of the island, near the town, in 30 fathoms sandy bottom; but the ground is foul in several places, with deep water close in shore. From Tidore in a South direction, POTBAKER'S ISLAND, MOTIR or MOONE, MACKIAN, KAYO, with other smaller isles, stretch along the coast of Gillolo at a considerable distance, nearly to the North part of the large Island Batchian; and mostly all these islands are bold to approach, with safe passages between them, and a good channel between them and Gillolo.

The only dangers are 2 small sand banks, dry at low water, almost 5 miles East from the middle of the passage between Tidore and Potbaker's Island, the next to the southward of Tidore, which are conspicuous when the sun shines, having then a white appearance; and although they lie in the fair way of ships coming from Tidore toward the strait of Patientia, yet by keeping the Gillolo shore a-board in the night, there is no danger. The anchorage at the island Mackian, although near the shore, is tolerably safe, in about lat. 0° 24′ N., off Fort Reeburgh, at the N. E. part of the island: on the 26th of November, 1814, the Scaleby Castle anchored in 35 fathoms sand and shells, with Fort Reeburgh S. W., off shore ¼ mile; the current setting to the southward. She had previously passed from the

westward between Mackian and Moone, the latter being the next island to the North of Mackian, situated between it and Potbaker's Island.

Latta Islands. GERFTSIUS, or LATTA ISLANDS, is a group of small isles and rocks, situated to the S.Westward of Mackian, not considered dangerous to approach in day light, for most of the rocks are visible. Geo. site of Wolf Rock; WOLF ROCK, in lat. 0° 30′ N. lon. 127° 6′ E., distant 17 leagues West of Gillolo, is the northernmost and outermost of these, and being level with the surface of the water, ought to have a good birth in the night. H. M. ship Virginia, saw the sea breaking over this rock, which was visible in the hollow of the swell; the Peak of Ternate bears from it N. E. ¾ N., distant 43 miles, another of the Molucca Islands bears from it S. E. by E., distant 4 leagues, and a small isle off the North end of the latter, is about the same distance from it, bearing E. by S.

Batchian, and adjoining islands. BATCHIAN, TAWALLY, and MAREGOLANG, are 3 large islands fronting the S. W. part of Gillolo, with numerous small islands contiguous to them, most of which are safe to approach. Batchian is a high island, extending about 18 leagues in a S. S. E. direction, its southern extremity being parallel with the South end of Gillolo; and the STRAIT of PATIENTIA, or PATIENCE, is formed between them. The Strait of Batchian is formed betwixt the West coast of the island of this name, and the adjacent islands. The southern part is broad, and there is good anchorage in most places, with shelter in some of the bays or harbours formed by the islands; but the tide in the North part of the strait, runs very strong. Both these straits are safe for ships, with proper attention, but that of Patientia is considered the best, being wider than the other, although destitute of good anchorage, except in some bays, on the Batchian shore. Tides. The tide sets through among those islands to the northward and southward, about 6 hours each way, although not always regular; and it rises about 6 feet.

The Dutch frigate Maria Reygersbergen in 1805, went from Amboina to Ternate through the STRAIT of PATIENTIA, and returned by the same route, and her journal contains the following remarks.

Geo. site of Negory Kalam. NEGORY KALAM North point, is in lat 0° 28′ N., lon. 127° 37′ E, and 2 miles South of the point, lies the village of this name, having good anchorage off it in 25 and 30 fathoms stiff ground. A little South of the village, there is a fresh water river, where abundance of wood, water, and refreshments may be procured. When at anchor here, the North point of Kayo bore S. by W. ¼ W., Potter's Island W. by N., Motir S. W. by W., and Mackian S. W. by S.

Geo. site of Kayo. The Island Kayo, or Cayo extends from lat. 0° 7′ N. to 0° 1′ S., and is in lon. 127° 23½′ E.

Geo. site of Patientia Strait. The North point of Gillolo that bounds the eastern side of Patientia Strait in coming from the northward, is in lat. 0° 13′ S., lon. 127° 45½′ E.; and West from it distant about 7 miles, lies Batto Lombo Island, close to the Batchian shore, which bounds the entrance of the strait on the western side. Between the N. E. point of this island, and the point of Batchian called Bristly Point, lie 2 islands near the shore, and to the southward of the point and southernmost of these islands, there is a large bay, with good anchorage, and plenty of wood and water. Watering places.

When through the narrows, and to the S. Westward of West Island, close to the shore of Batchian, is situated Lelary Island, low, long, and flat, covered with trees: opposite to its N. E. point, there is a fresh water river on the Batchian shore, where plenty of wood and water may be obtained. Geo. site of Amsterdam Island. Amsterdam Island, situated in the middle of the narrows, is in lat. 0° 20½′ S., lon. 127° 53½′ E. by chronometer from Amboina.

Geo. site of The S. E. extremity of Batchian, called John Heneker's Point, in lat. 0° 48′ S., lon.

128° 3′ E. has soundings of deep water, within a small distance of the shore, with some contiguous isles, and projecting spits, which should have a proper birth. John Keneker's Point.

The best route from Ternate or Tidore, to Amboina in the S. E. monsoon, is considered to be through the Strait of Patientia. After the reduction of Ternate by the British, the Albion, Captain Wallace, sailed from Tidore on the 8th of July, 1801, having troops on board for Amboina, and proceeded through this strait. She stood over toward the Gillolo shore in order to avoid the sand banks which lie nearly ½ channel over from the South end of Tidore, then worked to the southward betwixt Batchian and Gillolo, with variable winds and much rain. After approaching the group of isles called Amsterdam, East and West Islands, and others which nearly bar the middle of the strait, she went through a very narrow passage, between Batchian and West Island, which is the nearest isle to the eastward, and here the tide was exceedingly rapid. This passage ought not to be chosen, for the other passage to the eastward of it, is much broader. Captain M'Call came through the latter in the Clyde, and found it perfectly safe, when passing through the Strait of Patientia, shortly after the Albion. No soundings were got in proceeding through it. Directions for sailing through the Strait of Patientia, toward Amboina.

Having got through the narrows, a ship ought to stand over to Gillolo, and keep along this shore, because a shoal is placed in the Dutch charts to the eastward of East Island and the Middle Sand, which lies in the southern mouth of the strait, nearly mid-way between the East point of Batchian and the Gillolo shore, and must have a birth in passing; on either side of it the channel is safe. When it is approached, a number of small isles surrounded with reefs will be discerned, which must have a birth in steering out of the strait to the southward for Oby Major; and after passing through any of the channels to the eastward of the latter, (already noticed in the section where the Gillolo Passage is described) a ship ought to proceed to the southward betwixt Manipa and the East end of Bouro.

BOURO, has been already mentioned, and the geographical situation of its North coast described, in the section where instructions are given for sailing through the Pitt's Passage; but it becomes necessary here, to describe the great bay and the adjacent islands. Bouro.

CAJELI, or BOURO BAY, situated at the N. E. part of the island, is easily known by the Island Manipa which bears East from it. The points on both sides of the entrance, are lined by reefs, no soundings are got until near the shore inside of the bay; there is good anchorage on the North side, within the rounding of the point, from which a reef of coral stretches out a little distance; but the proper road is at the S. E. part of the bay, where Fort Defence and the village are situated in lat. 3° 24′ S., lon. 127° 4′ E. by chronometers from Amboina, and the mean of many lunar observations. Cajeli Bay. Geo. site of the Fort.

To enter the bay with a turning wind, do not approach near the points on either side, nor borrow into the North side of it; the southern shore is fronted by an extensive coral reef, to the distance of a mile, or more, which shews itself, and may be always avoided with a good look out. With a fair wind, steer westward about midway between the points, until the western pitch of the South bluff point bears about S. W. and when the town begins to open in view, haul gradually to W. S. W. and S. W. till the North point of the bay bears to the eastward of North. By keeping the point in this direction and the fort South or S. ¼ E., you will pass clear of the reef which projects about a mile out from the East side of the bay, and will go between it and the pitch of a flat that extends a mile off the western shore. Directions for sailing to the anchorage.

There is a rugged mount or double peak on the South side of the bay, called the MOTHER and DAUGHTER, which is a good mark: steer into the bay until this mount bears about S. E. by S., then haul right in for the town, and anchor off it in 27 to 24 fathoms muddy bottom, at the distance of 1 or ¾ mile from the beach, with the fort bearing South or S. by W., a small Red Island East, and the North point of the bay N. ½ E. The

best birth is in 19 fathoms with the Fort bearing S. by W. ½ W. distant 1 mile, Mother and Daughter S. E., East point of the bay N. E. ½ E., N. W. point N. W. by N.

A ship may anchor with the fort bearing from S. S. E. to S. S. W., but as the bank is steep, sail ought to be reduced in time, and the anchor dropped not under 25 fathoms; this is indispensible, to the westward of the fort, where the water shoals from 20 fathoms as fast as the lead can be hove, to 2 fathoms hard sand, whereby several ships have grounded in coming to anchor. The fort ought not be brought to the eastward of S. S. E., for the hard sand bank lining the West side of the bay, projects near a mile from the shore, having only 2 or 3 fathoms water on it, and 35 fathoms at the distance of a cable's length outside. Should a ship by accident get to the westward, she ought to anchor in 40 fathoms mud, and will then be about 2 cables' lengths from the edge of the bank.

The coral reef that fronts the S. E. shore of the bay, has only 3 or 4 feet water over the rocks, and there is 40 fathoms about 2 or 3 cables' lengths outside; therefore, it ought not to be approached under 40 or 45 fathoms.

Refreshments. In this bay, ships are sheltered during both monsoons, and as brisk land winds prevail in the night, the egress is easy. Goats, hogs, fowls, and vension, may be procured here, sufficient for 2 or 3 ships, and fruit of various kinds, in abundance. The water is very good, and procured about 100 yards to the eastward of the fort, but as long-boats cannot come close to the shore, it is necessary to swim the casks off to them. Wood is plentiful, and spars fit for masts may be got from the durian-tree; the Cai-pooty tree abounds on this island, from which the natives extract that valuable oil in great quantities.

Tides. The tides rise and fall about 6 feet, high water at 1 hour on full and change of the moon, but they are not very regular. Variation 1° West in 1798.

Southern coast of Bouro. Close to the West end of Bouro there are some small islands, and the Dutch charts place a rock above water, about 2 or 2½ leagues off the S. W. part. The southern coast is of semicircular form, steep to approach, and destitute of shelter: from the southernmost point, situated in lat. 3° 49′ S., a reef projects a considerable way, having a small isle to the eastward, said to have anchorage close to it.

Geo. site of Amblaw. AMBLAW, in lat. 3° 52′ S., lon. 127° 14′ E.* is an island of considerable size, separated from the S. E. point of Bouro by a channel 5 or 6 miles wide: there is said to be a reef of rocks nearly in the middle of this channel, which is laid down in several charts; but it is omitted in a large Dutch manuscript chart, in my possession, and some navigators state the channel to be clear of danger. Close to the shore of Amblaw, there is a place where Dutch vessels occasionally anchor, but the bottom appears to be foul.

Geo. site of Manipa. MANIPA, is a high island, situated about ½ way betwixt the East end of Bouro and the West end of Ceram, the body of it being in lat. 3° 17′ S., lon. 127° 28′ E. About 1½ mile off its western extreme, lies a rock or islet, betwixt which and Manipa there is a safe passage for any ship. The channel between this islet and Bouro is about 5½ or 6 leagues wide, clear of danger, destitute of soundings, and is frequented by all ships that pass betwixt Bouro and Ceram. On the South side of Manipa, a fort is situated, off which, and within a small islet, there is anchorage close to the shore: some small islets lie close to the North side of Manipa.

Geo. site of Bonoa. BONOA, in about lat. 3° 0′ S., lon. 127° 56′ E., is a high rugged steep island of considerable extent N. E. and S. W. separated from the N. W. part of Ceram by a safe channel 3 or 4 miles wide; which is contracted a little by small isles and shoals, that stretch along the Ceram shore.

* The frigate, Maria Reygersbergen, made the South point in lat. 3° 57′ S., lon. 127° 20½′ East by chronometer from Amboina.

PULO BABY lies to the S. S. W. of Bonoa, and is lower than the adjacent islands; it is separated from the West point of Ceram, by a narrow passage called Nassouwens Gat, fit only for proas and small vessels. Pulo Baby.

KELANG, is a high island close to the S. Westward of Pulo Baby, there being no passage between them; but there is a safe channel about 4 miles wide, betwixt Kelang and Manipa, which lies to the S. W. of the former island. The tides or currents which set through these channels, sometimes produce strong ripplings resembling breakers; and they make a great noise when calm in the night. Kelang.

CERAM, excepting some parts near the sea, is formed of high mountainous land, extending nearly East and West about 54 leagues; the S. W. point called Seeal, or Dry Rice Point, is in lat. 3° 31′ S., lon. 127° 56′ E., and forms a peninsula, with Lahoo Deep Bay to the N. E. This bay, has some small islands and shoals at the entrance, with soundings inside, and is situated to the northward of Amboina; for Seeal Point lies directly North from the N. W. extreme of that island. Kessing East point, in lat. 3° 55′ S., about lon. 131° 10′ E., may be considered as the eastern extremity of Ceram, the small Island Kessing being chained to it by a reef, and the narrow gut that separates them is not easily discerned. Amahay Bay, lies directly to the northward of the small Island Noesa Laut, and has soundings of deep water in it. The South coast of Ceram is bold to approach, except Hoya Point, situated 9 or 10 leagues to the eastward of Amahay Bay, has a small sandy isle and sand banks, stretching out from it about 2 miles. Within 7 leagues of Kessing Point, a coral reef lines the coast from thence eastward, and around the Island Kessing. Geo. site of Ceram.

SAWA BAY, on the North coast of Ceram, in lat. 2° 51′ S., lon. 129° 6′ E., has the outer island Pulo Bassar, and several small isles surrounded by shoals, stretching out 2 or 3 miles from the low point Tanjong Craw,* which forms the West point of the bay; and the islands near the shore at the S. E. part of the bay, are also environed by shoals. The channel leading to Sawa Road or Harbour, is to the westward of the latter, by steering South for a mount called the Friar's Hood, situated at the bottom of the bay near the village Selema; and having rounded the reef and islands that front Sawa Road, a ship should haul along the shore to the eastward, and anchor near it, with Pulo Attuee the westernmost island, bearing North. This road is about $\frac{3}{4}$ of a mile in breadth, with soundings of 40 to 25 fathoms, close to the Ceram shore, which is the safe side, as there is a reef to the S. E. of Pulo Attuee. Although the water be deep, the bottom is mud, affording good anchorage: and this place forms a good harbour in the S. E. monsoon, where excellent fresh water may be procured, and large spars. Sawa Village is in lat. 2° 56′ S. Old Lamata, or Flat Point, lies to the eastward in lat. 2° 53′ S., lon. 129° 42½′ E. Geo. site of Sawa Bay. Geo. site of Flat Point.

WAROO or WAKOO BAY, in lat. 3° 25′ S., about lon. 130° 40′ E., is situated at the N. E. part of the Island Ceram, affording good anchorage, where water and other refreshments may be procured.† Geo. site of Waroo Bay.

* In the Dutch frigate's journal, it is called Para Point, and placed in lat. 2° 49′ S., lon. 129° 12½′ E.

† The inhabitants of these villages on the coast of Ceram, are generally hospitable to Europeans, who touch for refreshments, or to trade; but they are in an abject state of savage poverty. The natives of this island are *said* to have devoured the prisoners procured by their depredations against each other, which practice has ceased since the Dutch purchased them as slaves. They are timid assassins, and generally make their depredations in the night; skulls hung in their huts as trophies of valour, are still frequently seen, and a gentleman who has been much among those people says, that the young men must produce a skull of a human victim, each to his intended bride, before she will consent to accept him for her husband.

Geo. site of Leeuwarden Shoal.

LEEUWAARDEN SHOAL, in lat. 2° 56′ S., lon. 130° 43½′ E. or 2° 44′ East of Allang Point, Amboina Bay, by chronometers, is distant about 7 miles from the shore that forms the N. W. side of Waroo Bay: it is 2 or 3 miles in extent, in form a crescent, steep to, and very dangerous, the West side being a white sand bank, and the eastern side a ledge of rocks, with high breakers, many of the rocks above water. The ship Venus, of Bombay, got upon this shoal in 1799, during the night, and was abandoned by the crew. There are no soundings near the shoal, nor in the channel between it and the shore, which is considered safe.

If coasting along with an offing of 7 or 8 miles from the high land of Stole, you bring the Friar's Hood to bear S. by W. ½ W., or when you open the Friar's Hood to the eastward of the high land of Stole, you will then be on with the West point of the shoal.

Geo. site of Leeuwaarden Island.

Leeuwaarden Island, in lat. 3° 20′ S., lon. 130° 58′ E., is situated to the northward of the East point of Waroo Bay, called Berg Wakoo by the Dutch.

Isles and channels off the East end of Ceram.

To the eastward of Kessing, and the reef that surrounds it and the East end of Ceram, there is a small isle, betwixt which and Kessing, a good channel is formed about 2 or 3 miles wide, with soundings from 30 to 50 fathoms in mid-channel, and 5 to 10 fathoms close to the reefs; the narrowest part of this channel, seems to be about 1 mile in breadth.

Ceram Laut.

CERAM LAUT, bears about East 6 miles distant from the South point of Kessing; and is the westernmost and largest of a range of small islands, chained together and surrounded by a reef, that extends 5 or 6 leagues nearly East and West.

Geo. site of Goram.

A group of 3 islands, lie to the eastward of the Ceram Laut Chain, of which GOZAM, or GORAM, in lat. 4° 0′ S., about lon. 131° 44′ E. is the easternmost; there is a channel to the westward of this island, but no safe passage between the westernmost 1 and the Ceram Laut Chain. The southern island of the Goram group, has a high flat hill on it, and is called Manavolka.

Mattabella Islands.

MATTABELLA ISLANDS, in lat. 4° 21′ S., lon. 131° 52′ E., form a group 3 in number, having a safe channel about 3 or 4 leagues wide between them and the Goram Islands. Towa Island, lies about 7 leagues S. S. Eastward from the Mattabella Islands; and a chain of islands is continued from thence, in a S. Easterly direction to the Keys, already mentioned in the preceding section.

Amboina Island,

AMBOINA, or AMBOYNA, is a high island about 11 or 12 leagues in extent N. E. and S. W., being the largest of those called Clove Islands, and it is the chief residence of the government of the Molucca Islands. Three small isles, called the Three Brothers, project from its N. W. point in a northerly direction, having safe passages between all of them, also betwixt the southern 1 and Amboina. The great bay, extends about 7 leagues into the island, separating it nearly into 2 parts.

and Bay.

AMBOINA BAY, is formed at the entrance by 2 high points, that of Allang on the West side, and Noessaniva Point to the eastward: they are steep to, situated in lat. 3° 47′ S., and bear nearly East and West of each other, distant 6 or 7 miles. About 3 cables' lengths from Noessaniva Point in a S. S. E. direction, there is a narrow bank of sand stretching East and West, having soundings of 15 to 50 fathoms on it, upon which a ship might anchor when calm. It is detached from the shore, for no ground is got when Allang and Noessaniva Points are just open, or touching each other.

Inside of Noessaniva Point, there is a small concavity, called Portuguese Bay; but no soundings are obtained on either side, at the distance of a cable's length from the shore, nor within ½ a cables' length in many places, until well up.

Geo. site of Fort Victoria.

FORT VICTORIA, situated on the South shore of the bay, in lat. 3° 40′ S., lon. 128° 15′ E.,* by a series of observations of

* This longitude of Fort Victoria, is agreeable to the observations of other navigators, beside those of Captain Heywood. The Dutch frigate, Maria Reygersbergen's chronometers, made it in lon. 128° 13½′ E. measured from

☉ ☽ ✱, taken by Captain Heywood, in 2 different voyages; these corresponded exactly with his chronometers in a quick run of 11 days from Malacca, in H. M. frigate Dedaigneuse, in December, 1802, which made the flagstaff 26° 0′ E. from Malacca.

The best anchorage is abreast of the town, or rather above the wharf, in from 25 to 40 or 45 fathoms water, on a steep bank stretching about 4 cable's lengths from the beach. Close below the fort, a sand projects out a little distance, having 34 fathoms very near it. Anchorage.

It is prudent to moor with the anchors nearly up and down the bay, that in case of parting from 1, the other anchor may bring a ship up, before she tail upon the shore. As the bottom is foul in several places, this precaution is more necessary; some ships carry a hawser or cable to 1 of the anchors placed at convenient distances on the shore, to prevent being driven off the bank. The distance from Fort Victoria, across the bay to the opposite shore, is about 2 miles: there are no soundings in mid-channel, but there is anchorage opposite to the town and fort, near the western shore, where a ship may bring up, in case of being driven from the anchorage at the town. There is also anchorage in Dutch Bay, situated on the eastern shore, about 2 miles below the fort and town.

The tides in the bay are very irregular, being governed chiefly by the winds, and rise about 6 or 7 feet. The course up the bay is N. E. by E., and the distance from Allang Point to the anchorage at Fort Victoria, is about 5 leagues. Tides.

The best time to enter between the heads, in the westerly monsoon, is in the morning, betwixt day-light and 8 or 9 A. M.; and by keeping nearly in mid-channel, inclining to the N. Western shore, a ship will generally carry a breeze up to the anchorage off the town. During the night, light variable airs or calms generally prevail, accompanied with an outset, which renders the progress up the bay difficult and tedious; for ships are liable to be drifted about by the eddies, or probably out of the bay, after getting ½ way up by a favorable breeze. There is, however, no danger to be apprehended in entering it during the night, for although a ship may seem to be drifting toward the beach on either side by the tides when calm, where no anchoring ground is to be got; yet, when the shore is approached within a certain distance, the ship will generally be set along parallel to it, or drifted off again into the middle of the bay. To sail into the bay.

In the easterly monsoon, as the current frequently sets strong past the points of the bay to the westward, a ship coming from this direction, ought to work up in the offing until Noessaniva Point bears N. N. E. or N. by E.; she should then, steer to round it pretty close, keeping along the southern shore of the bay at a moderate distance, under low sail; for the sudden gusts of wind which come off the hills at times, might endanger the masts with light sails set.

A ship may be supplied with water, fruit, and vegetables, at Amboina, but fresh provision is scarce; bullocks, deer, &c. are brought from Bouro and the adjacent islands at times, for the use of the garrison, but not in sufficient quantity to afford any regular supply to ships. Strong gales are often experienced in the westerly monsoon, about full and change of the moon, which are generally preceded by a large swell tumbling into the bay. Refreshments.

INNER HARBOUR, situated at the upper part of the bay, being well sheltered from all winds, is generally resorted to, by small ships at the approach of blowing weather; but the entrance into it being narrow, a pilot is requisite to carry a ship through the channel. This place is considered to be unhealthy, for the crews of ships are sometimes very sickly here, when those in the outer harbour continue healthy. The watering river is on the western shore, about 7 or 8 miles from Fort Victoria; and known by a house on each side of it, at a small distance. With the assistance of hoses, the casks are filled speedily, and a loaded long boat can only float out at high water. Inner Harbour.

Batavia. The lon. 128° 29′ E. observed by Bertrand, the astronomer of the ships that went in search of La Perouse, is *certainly* too far to the eastward.

The head of the inner harbour, is separated by a small isthmus from a bay on the East side of the island, which has soundings and some shoals in it, but is not frequented by ships.

The northern shore of Amboina is clear of danger, and the channel betwixt the N. W. Brother and Ceram is 4 or 5 miles wide; but the currents or tides among those islets, are strong, and not very regular.

Haraucka Island.

HARAUCKA, or OMA, is separated from the eastern part of Amboina by a navigable channel about 1 league wide, which is contracted to 1 mile at the northern entrance, by a sandy islet contiguous to Amboina: this islet is safe to approach, but the Haraucka shore opposite is foul, and there is a fort on the West side of this island.

Honimoa Island.

HONIMOA, or SAPAROOA ISLAND, lies close to the East of Haraucka, the channel that separates them being only 1 mile wide in the narrowest part, destitute of anchorage, and subject to strong currents or tides; a vessel in going through it, must therefore keep near the Haraucka shore. The South point of Honimoa, called the Dolphin's Nose, is in lat. 3° 38′ S., distant about 12 leagues E. by N. ½ N. from the entrance of Amboina Bay: there is an islet close to it, called Pigeon Island, and the small island Malana, lies about 2 miles to the S. W. Saparooa Village, and Fort Durrstede, are situated at the bottom of the bay,

Anchorage.

which is formed between the South and S. E. points of the island; there is good anchorage in 12 fathoms near the fort in the westerly monsoon, by steering in about mid-channel between the reefs that line both sides of the bay, but no soundings are got until within a mile of the fort.

Geo. site of Noesa Laut.

NOESA LAUT, in lat. 3° 40′ S., lon. 128° 52½′ E. is small, separated from the S. E. point of Honimoa by a safe channel about 2 miles wide; it is the easternmost of the Clove Islands, and produces the best cloves of any of them. Foul ground projects around it to the distance of ¼ mile, but there is said to be anchorage at the North part, and off the N. W. part, where there is a fortified house.

Channel between those islands and Ceram.

The foregoing 4 islands, called generally the Clove Islands, are of middling height; but the high land of Ceram being near them to the northward, they appear as part of it until closely approached. When a ship is working between them and Ceram, she ought to give a birth to the North part of Haraucka, and the N. W. end of Honimoa, because foul ground projects from them about a mile; whereas, the Ceram shore abreast of these islands, is bold to approach.

Banda Islands.

BANDA ISLANDS, form a group, 10 in number, situated near each other; the harbour is formed by Banda or Great Banda on the South side; Goonong Apee or Burning Mountain, and Banda Neira on the North side; with 2 isles at the eastern entrance, 1 called Pulo Pisang, and the other Pulo Cappel from its resembling a ship's hull, which is very small. These islands being high, are subject to sudden gusts of wind, with hot oppressive weather in the day, but the nights are cool.

Geo. site.

The anchorage in lat. 4° 31′ S., lon. 130° 0′ E.,* is at the foot of the Burning Mountain, which generally emits smoke; and shocks of earthquakes are frequent.

Sailing directions.

The eastern channel is safe to enter Banda Harbour, giving a birth of ½ a mile to the shore of Great Banda, and to that of Banda Neira: a ship may pass on either side of Pulo Pisang and Pulo Cappel, and when to the southward of them, the channel is about 3 miles wide. The anchorage is abreast of the wharf at Banda Neira, in 7 or 8 fathoms. The Orpheus' Bank, which has only 15 feet on it at low water spring tides, will be avoided by not shutting

* The frigate, Maria Reygersbergen's chronometers and observations, made the anchorage in lat. 4° 33′ S., lon. 130° 5½′ E.

in the eastern point of Great Banda with the low S. E. point of Banda Neira, and anchoring with Pulo Way or Ay, just shut in with the point of Goonong Apee, and Battakeeka Fort on the hill N. by E., distant about ½ a mile off the wharf.

It is high water on the shore at 2 hours on full and change of the moon, and the rise of tide is about 9 or 10 feet. At the anchorage, it is high water at 4 hours, where the tides are strong, but not very regular; it is therefore, proper, to moor immediately.

Ships can only go in by the western channel in the westerly monsoon, which is formed between Goonong Apee and Great Banda; a reef stretches out from the western part of Great Banda, to nearly mid-channel, contracting the passage to a ¼ mile in width, making it necessary to keep close to the Goonong Apee shore, which is steep to. The extreme of Pulo Way kept just *touching open* with the extremity of Goonong Apee, will lead a ship to the anchorage. This channel is frequented by ships coming in during the westerly monsoon, and by those going out in the opposite season.

There is a passage between Goonong Apee and Banda Neira, but it being very narrow, with rapid tides, and destitute of good anchorage, it is seldom used except by small vessels.

The harbour of Banda, bears E. S. E. about 40 leagues distant from Noessaniva Point at the entrance of Amboina Harbour, and 18 leagues S. 47° W. from Kessing Point on Ceram.

Rosingeyn Island, lies about 4 miles to the eastward of Great Banda; Pulo Way, and Pulo Rhun, lie to the westward. Pulo Way bears nearly West 7 miles from Goonong Apee, and E. by N. ½ N. 4 miles from Pulo Rhun, betwixt which, the passage is said to be unsafe. The northernmost island of the group, called Pulo Swangy, bears nearly N. ½ W. from Pulo Way.

The islands Great Banda, Banda Neira, Rosingeyn, and Pulo Way, produce excellent nutmegs; the soil of these islands being more favorable for the culture of the nutmeg tree, than the soil of Amboina.

Banda Neira is well fortified, particularly in the western channel, and here, the resident resides, who governs these islands.

TURTLE ISLANDS, 3 in number, are very low, covered with trees, and dangerous to approach in the night, being fronted by coral reefs which project 2 or 3 miles from them. The easternmost island is in lat. 5° 25′ S., lon. 127° 38′ E,* bearing from the entrance of Amboina Harbour S. by W. ¼ W., distance about 33 leagues. The westernmost island is separated considerably from the other 2, for the Sibbald had the easternmost island bearing N. N. W. ½ W., distant 10 miles, seen from the deck, with the trees on another island open to the westward of it, just visible from the poop, when the S. Westernmost island was seen from the mizen-top-mast rigging bearing about W. N. W. Geo. site of the Turtle Islands.

LUCAPIN-HAY, or LUCEPARA ISLANDS, in lat. 5° 40′ S.,† lon. 127° 21′ E. by chronometer from Amboina, lie about 5 or 6 leagues to the S. W. of the Turtle Islands; they form a group of 5 low isles, covered with trees, and cannot be seen above 4 leagues from the deck. The passage betwixt them and the Turtle Islands, is safe in day-light, being 4 leagues wide, through which the frigate Maria Reygersbergen passed with her convoy in 1805, when bound from Batavia to Amboina. Geo. site of Lucepara Islands.

GOONONG APY, or BURNING ISLAND, in lat. 6° 35′ S., lon. 126° 40′ E. or 1° 35′ West from Amboina Flagstaff by chronometer, bearing S. W. ¾ S. from the Lucepara Geo. site of Goonong Apy.

* Capt. Forbes, in the Sibbald, saw these islands on the 20th of April, 1816, in his passage along the North side of Flores, toward Amboina, and made the easternmost island in lat. 5° 26′ S, lon. about 127° 50′ E.

† The Dutch frigates observations, place this group farther to the N. E., viz. from lat. 5° 27′ to 5° 33′ S., lon. 127° 33′ E.

Islands, distant 23 leagues, is a high conical mountain which may be seen 15 or 16 leagues. It is in a state of ignition, with smoke generally issuing from the crater at the summit, and is bold to approach.

To sail from Amboina to Banda.

DURING the strength of the EASTERLY MONSOON, in July, August, and September, ships from Amboina bound to Banda, should stretch to the southward, and they will generally fetch the coast of Timor. Here, the current runs often strong to the eastward in these months, and the wind becoming variable and veering more to the southward, enables ships to stand on the starboard tack about N. E. by E., and fetch Banda. This passage may be performed in 6 days; whereas, the route to the northward of Ceram, and round its eastern extremity, generally pursued by the Dutch, frequently requires more than double that time.

To sail from Amboina to Hindoostan,

SHIPS bound from AMBOINA, or from any of the other Molucca Islands, to Hindoostan, ought not to attempt the southern passage during the strength of the westerly monsoon; if they depart before the month of March, the northern route is preferable, particularly when bound to Bengal or the Strait of Malacca.

by the northern route, in the S. W. monsoon.

DEPARTING from AMBOINA, to proceed by the northern route, ships should endeavour to get over toward the Island Amblaw, and keep the East side of Bouro a-board, that they may benefit by its land winds and squalls, and avoid the S. E. currents which frequently prevail between Ceram and Amboina, and near Manipa, in the westerly monsoon. When abreast of the North point of Bouro Bay, the wind will generally permit ships to stand over about N. N. E. for Gomona and Oby Major; they should then proceed through the Gillolo Passage, or betwixt Geby and Gagy as circumstances require. Having cleared this passage, the progress will be slow, for S. Easterly currents prevail, with light N. W. and northerly winds, accompanied at times by squalls and rain. Every means ought to be used to get to the northward in this track, without minding if a little easting is made; for after reaching lat. 5° or 6° N., the N. Easterly winds may be expected, to run with to the westward.

Having in these latitudes got into the edge of the N. E. monsoon, the best track is to steer to the northward of the Meangis Islands, for the South point of Mindanao, and after passing between it and the Serangani Islands, a course should be pursued through the Strait of Baseelan, because the winds hang as much to the West as to the eastward of North. If a ship enter this strait in the morning, with a breeze from the Mindanao shore, she will probably get through before night, if the tide happen to be in her favor; she ought to keep along the North side of the strait, betwixt the Santa Cruz Islands and Mindanao, where water and refreshments may be got at Samboangan, if required.

From Samboangan, a W. N. Westerly course ought to be followed, to pass to the North of the Islands Sangboy and Teynga; from thence, steer for Cagayan Sooloo, and having passed it, a course ought to be steered to get into the latitude of Banguey Peak, when 8 or 9 leagues to the eastward of the Mangsee Islands. After passing through this strait, betwixt these islands and the North part of Banguey, a course should be pursued for the Strait of Malacca, agreeably to the sailing directions given for those places, where the descriptions of them will be found in the preceding sections of this work.

Southern Route.

SHIPS from AMBOINA, bound to Hindoostan in March, may proceed by the southern passage, and as the winds hang mostly from the westward in this month, it is advisable to stand up toward Bouro, and from thence work over near St. Matthew's Islands. Having approached these and Velthoens Island, a southerly course ought to be followed, and if the wind is favorable, it may be prudent for a ship to keep well to windward, and pass through the Strait of Alloo. This strait is preferable to that of Pantar, being much wider, and far-

ther to windward in the westerly monsoon; and when clear of it, a ship ought to keep to the westward, in order to proceed through the channel between Sandalwood Island and Savu, into the open sea; or she may pass out on the East side of the latter island, if the wind be unfavorable for proceeding out by any of the channels farther to the westward.

DEPARTING from AMBOINA in April, May, June, July, or August, steer for Burning Island, for in April, the westerly monsoon fails, and is succeeded by light S.Easterly breezes. Care must be taken to give a birth to the Lucepara Islands, in passing toward Burning Island, which may also be left to the eastward; observing that the current sets often strong to the westward in the easterly monsoon: from thence, steer to make the West end of Wetter, or Dog Island, and proceed betwixt Pulo Cambing and the East end of Ombay, and between the latter and Timor, through the Ombay Passage. Being once so far to the southward as Rotto or Savu, the S. E. winds will begin gradually to increase in strength, and a course may be steered to pass out to the southward of Savu. The passage from hence to Hindoostan, may be accomplished in from 20 to 30 days by a ship that sails well.

If bound from Amboina, or Banda, to Batavia in these months, you should if leaving Banda, steer to make the high land of Roma, and then to the North of Wetter, giving a birth to a shoal that lies about 8 miles off its N. W. point. From hence, steer for Pulo Cambing, and along the North coast of Flores, passing between Rusa Raji and it, then along the North coasts of Sumbawa and Lombock; having brought the latter to bear to the southward, steer to pass to the eastward of Urk, and between Kangelang and the Four Brothers; otherwise, you may steer from Lombock to pass between Hog Island and Galion, and afterward along the North side of Madura and Java.

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# *PASSAGE to CHINA, EASTWARD of NEW HOLLAND.*

## VAN DIEMEN'S LAND, AND THE CONTIGUOUS PORTS, WITH SAILING DIRECTIONS.

THE PASSAGE to China round to the eastward of New Holland, has been mentioned in vol. first of this work, where directions are given for sailing toward Van Diemen's Land, and through Bass' Strait, with a description of the principal headlands, islands, winds, and weather. It nevertheless, seems proper, to give farther directions for sailing into the places of shelter at Van Diemen's Land, and those on the coast of New South Wales, where ships bound to China or to Port Jackson, may procure fresh water, when in want of this necessary article, or repair any slight injury sustained by stormy weather. Passage to China, outside of New Holland.

Brief instructions will follow, concerning the passage from Van Diemen's Land toward China, but to enter into a *particular* description, of the innumerable islands interspersed throughout this part of the Pacific Ocean, would be impossible in a work of this kind; recourse must therefore be had to the best charts of the Pacific Ocean, by those who follow this route toward China.

VAN DIEMENS LAND,* on the western side, is generally a rocky shore, of sterile Western coast of Van Diemen's Land.

* The S. Eastern coast, was discovered by Abel Janson Tasman, in 1642, who named it Van Diemen's Land; but it was not known to be an Island, until Captain Flinders and Mr. Bass, in 1798-9, under the direction of Governor Hunter, sailed round it, who gave the name of Bass' Strait, to the sea that separates it from New Holland.

aspect, with reefs fronting it to the distance of 3 or 4 miles in some places; and a large S. Westerly swell usually rolls in upon it from the ocean. In many places this coast is low, but in several parts, the inland mountains stretch nearly down to the sea, having a white barren appearance.

Geo. site of Cape Grim, and West Cape.

CAPE GRIM, in lat. 40° 41′ S., lon. 144° 46′ E., is the N.Westernmost promontory of the coast; and WEST CAPE, or SANDY POINT, is in lat. 41° 4′ S., lon. 144° 36½′ E. Hitherto, the West coast of Van Diemen's Land, was thought to be destitute of shelter for ships; but 2 harbours have been lately discovered, in a vessel fitted out by Mr. Birch, a merchant of Hobart's Town, purposely to examine minutely the coasts of that island. She performed the circumnavigation of the island in 39 days, about the end of 1815, and discovered the following 2 harbours.

Geo. site of Macquarie Harbour.

MACQUARIE HARBOUR, in lat. 42° 12′ S., lon. 145° 28′ E., has on the bar at its entrance only 9 feet water, with a tide of 5 or 6 knots, consequently can only admit of small vessels passing over the bar; but inside, the water deepens to 10 fathoms, and decreases afterward gradually, in sailing up the harbour. The brig Sophia,* Captain Feen, after anchoring in 7 fathoms outside of the bar to wait for the flood tide, crossed over, keeping the starboard shore aboard, and after deepening to 10 fathoms, proceeded upward in a narrow channel between shoals, till 10 miles above the bar; and when 20 miles from the bar, the depth gradually decreased to 2 fathoms. Having proceeded about 2 miles farther up in the whale boat, the north bank of the harbour was found to consist of strata of coal denuded by the sea in some parts: these strata of coal were 6 feet thick, with a stratum of clay between them.

In passing upward in the boat, the entrance of Gordon River, which disembogues into the harbour, was computed to be about 50 miles from the bar, and in pursuing a course up this river, the first *falls* were discovered nearly 50 miles farther inland; the course of the river, being through what was thought the western mountains, directly East from the harbours mouth.

Captain Feen, succeeded in sounding a passage, by which any vessel that can cross the bar, may proceed within ½ a mile of the *falls*, and anchor within 10 yards of the coal mine. The mountains on the northern shore, where the coal is, are barren, but the rest are generally covered with myrtle and pine. The brig took in a cargo of Huon pine, by drifting it down the river, which is excellent timber for joiners and cabinet work, boat building, and architecture.

Geo. site of Port Davey.

PORT DAVEY, in lat. 43° 28′ S., lon. 146° 0′ E., situated to the S. E. of point St. Vincent, and nearly 3 leagues to the northward of the southwest cape, is of great importance to the navigator, being an excellent harbour, separated into 2 arms, and extending several miles inland. The shores of this harbour, abound with that excellent timber called Huon pine, and it has the advantage of a fresh water river.

Geo. site of Point St. Vincent, and of the S.W. Cape.

POINT ST. VINCENT, in lat. 43° 16′ S., lon. 145° 55′ E., having 2 peaked rocks on its extremity, is a projecting point of land on the southern part of the West coast, with an opening round it to the S. Eastward, like that of a large river, which leads to Port Davey, described above. The S. W. cape is in lat. 43° 34′ S., lon. 146° 6′ E., which is a narrow steep point, projecting about a mile from the high land.

South Coast.

SOUTH COAST, resembles the western coast, and the projecting points are generally

* Belonging to Mr. D. M'Carty, who was then on board, being his 2d. voyage from the Derwent to Macquarie Harbour.

high, steep, and barren; some of them consisting of whitish stone, have the appearance of being covered with snow when viewed at a distance. There is no inducement for a ship to pass inside of the Mewstone, and Maat Suykers Isles, which lie to the eastward of the S.W. Cape; for although the openings betwixt it and the South Cape, appear at a distance, to afford shelter, they are all shoal bays, exposed to southerly winds: it is therefore, proper, to give a good birth to the western and southern coasts, particularly in the winter months.

Geo. site of South Cape and adjacent islets.

SOUTH CAPE, in lat. 43° 38′ S., lon. 146° 49½′ E., bears about *true* E. 8° S. (or East by compass) from the S. W. cape, distant 11 or 12 leagues, and has peaked hills over it. In the offing, in lat. 43° 51′ S., lon. 147° 8′ E., lie the White Rock, and Eddystone, sometimes called Swilly Rocks, which are 2 in number, and the outermost is generally called the Eddystone. The latter has the appearance of a sail at a distance, the other is a high rock bearing about W. S. W. from it, and they are connected by a ledge of sunken rocks.

The Mewstone is a high ragged rock about 3 leagues off shore, and the channel is safe inside of it, and the other 2 rocks mentioned above.

Geo. site of Tasman's Head. Islets off it.

TASMAN'S HEAD, in lat. 43° 32′ S., lon. 147° 26′ E., bearing *true* E. N. E. from the South cape distant 8 or 8½ leagues, is a rocky headland, with 3 steep islets and 2 black rocks off it, called the Friars. This headland is the southern extremity of an extensive island that stretches northward, and is separated from the S. E. part of Van Diemen's Land by a safe navigable strait, explored by admiral D'Entrecasteaux in May 1792, and since called by his name.*

Port D'Entrecasteaux.

D'ENTRECASTEAUX'S CHANNEL, is the wide space formed between the South Cape of Van Diemen's Land and Tasman's Head; and near the coast on each side of it, there is a group of small islands. At the western extremity of this large bay, Port Recherche, or D'Entrecasteaux's Port is situated, where the navigator of this name remained near a month, and found it safe, and very convenient for procuring wood and water. It is secured from most winds by the surrounding mountains; and the bottom is soft mud, with depths of 2½ to 3½ or 4 fathoms; the rise of tide which flowed only once in 24 hours, was about 6 feet perpendicular, high water from 9 to 12 hours at full and change of the moon, but influenced greatly by the winds. There is a rocky islet near the middle of the entrance of Port D'Entrecasteaux; and where the observatory was placed, near the entrance on the eastern side, the observed lat. was 43° 32½′ S., lon. 147° 6′.E. of Greenwich. Variation 8° East.

Geo. site of D'Entrecasteaux's Strait.

D'ENTRECASTEAUX'S STRAIT, is about 9 leagues in length N. N. E. and S. S. W., having several bays or harbours on the East side, where ships may lie sheltered from all winds; and the whole of the strait affords safe anchorage, in from 20 to 8 or 6 fathoms soft mud, mixed with sand in some places. There are several isles in this strait, but it is clear of hidden danger, and either shore may be approached with safety. Fresh water may be got at some of the brooks, which fall from the western shore into the coves near the North part of the strait, and also in a bay at the S. E. part of it; but it is difficult getting the casks to the boats, on account of the muddy shores.

The South entrance of this strait is 4 or 5 miles wide, with depths of 30 to 20 fathoms water, decreasing gradually inside, and it is situated to the N.Eastward of Port D'Entrecas-

* It seems to have been in the following year, 1793, that Captain John Hayes, of the Company's Bombay Marine, explored the same strait, in the ships Duke and Duchess, and thought it a new discovery. He also explored the River Derwent, which stretches from the North entrance of the strait, a great way inland to the N.W. and westward.

teaux. If a ship be taken with a gale of wind from S. E., when crossing between the South Cape and Tasman's Head, and find any difficulty in clearing either of these headlands, she may run directly to the northward into the channel, and through the South entrance of D'Entrecasteaux's Strait, then haul round the island that fronts the N. E. point of the entrance, and anchor in good shelter in the bay to the eastward of the point and island.

Adventure Bay.

ADVENTURE BAY, situated on the East side of the island that forms D'Entrecasteaux's Strait, contains good anchorage in 10 or 12 fathoms mud, but it is exposed to the swell when the wind blows from eastward; and fresh water is not easily procured, on account of the great surf that usually rolls in upon the beach.

Geo. site of Penguin Island, Fluted Cape, and Cape Frederick Henry.

A very narrow neck of land, separates this bay from 1 of the deep bays in D'Entrecasteaux's Strait; and Penguin Island, which lies close to the point that forms the southern part of the bay, is in lat. 43° 21′ S., lon. 147° 32′ E. Fluted Cape is situated a little way to the S. Eastward of Penguin Island, and bears from Tasman's Head about 10 miles N. by E.; and Cape Frederick Henry, bearing about N. $\frac{5}{4}$ E. 8 miles from Fluted Cape, forms the N. E. extreme of Adventure Bay.

Cape Pillar.

CAPE PILLAR, in lat. 43° 12′ S. is situated about 7 leagues eastward from Cape Frederick Henry, having a rock on it like a pillar, and close to it lies an island and a rock. Betwixt these headlands, is formed STORM BAY, a deep gulf stretching to the N. W., with a large bay at its northern extremity, called North Bay, which forms a great elbow to the East and S. Eastward called Norfolk Bay. At the western angle of Storm Bay there is a safe channel of 10 and 12 fathoms water, leading into the North entrance of D'Entrecasteaux's Strait, and into Derwent River. If a ship be suddenly taken with a S. E. gale between Tasman's Head and Cape Pillar, she may with safety steer to the northward round Cape Frederick Henry, then to the N. Westward and W. N. W. for the channel mentioned above; and after rounding the island and point that form the North side of the entrance, she may haul to the northward into Derwent River, which is safe and navigable for large ships a considerable way up.

North entrance of D'Entrecasteaux's Strait, with sailing directions.

Derwent River.

DERWENT RIVER, at the entrance, is 2 miles wide, with depths of 10 to 12 fathoms; some rocks line the point on the East side of the entrance, but Shoal Point situated well up on the southern shore, is the only place of danger, to which a birth must be given by keeping close over to the cliffs on the opposite side. Here, the river is contracted to $\frac{1}{2}$ a mile in width, and in sailing up thus far, Mount Direction is very conspicuous a-head, having a gap at the top, and it is situated in lat. 42° 48′ S. Risdon Cove, lies below this mount, where fresh water may be got, and a vessel drawing more than 9 feet, ought not to go higher because the river becomes very shoal, and contracted by banks.

Hobart's Town was built here a few years ago, by a colony from Port Jackson; and a communication is established over land between Port Dalrymple and Hobart's Town, which is already becoming a place of importance, on account of its excellent harbour, and being well situated for trade. The surrounding country produces excellent crops of wheat, barley, and other grain, the soil being remarkably fertile; there is also mines of marl and lime, the climate is besides very favorable for agriculture, so that Van Dieman's land has great natural resources.

The tide in Derwent River rises about 5 feet, and the time of high water precedes the passage of the moon over the meridian on any day about 4 hours; the stream in the river, is irregular and weak, seldom more than $\frac{1}{2}$ a knot. In the upper part of the river, where the water is fresh, flocks of black swans feed on the long grass, which grows on the mud banks.

There is good anchorage in several parts of Frederick Henry Bay, which is formed outside of the channel leading to Derwent River, and to the North entrance of D'Entrecasteaux's Strait.

OYSTER BAY, in lat. 42° 42′ S., lon. 148° 8′ E., is formed on the West side of an island of considerable size, separated from the East coast of Van Diemen's Land, by a strait about a league wide. The best channel seems to be from the eastward, round the North side of the island, where the depths decrease regularly from 20, to 6, 5, or 4½ fathoms, in sailing through the passage to the anchorage, which is in 5, 4, or 3½ fathoms, at the entrance of the bay; and inside of it, the depths are 2 or 2½ fathoms. There is a pool of fresh water close to the southern shore, and another near the Peaked Mount, on the neck of land that separates this bay from another bay on the East side of the island. Geo. site of Oyster Bay.

The coast from Cape Pillar to Oyster Bay Island, stretches *true* North about 10 leagues, and presents the same bold steep shore, as that which fronts the S. E. coast. coast adjacent.

North from Oyster Bay Island, about 4 leagues, lies the South extremity of a peninsula, with a great bay on the West side of it discovered by Captain Badin, and the South end of this peninsula although called Schouten's Island, is found now to be a continuation of the main. From hence, the coast extends northward to CAPE PORTLAND in lat. 40° 49′ S., lon. 148° 15′ E. which is the N. Eastern extremity of Van Diemen's Land: there are some hummocks on the pitch of this cape, with high land in the interior, but the circumjacent coast is generally low. From its eastern extremity the land of the cape extends 5 or 6 leagues to the W. N. W., forming an acute angle here, with a reef projecting several miles from it, and some islets, also the Swan Isles 6 or 7 miles to the eastward, having a small channel between them and the cape land. Geo. site of Cape Portland.

NORTH COAST of Van Diemen's Land, has generally very smooth water along it, the prevailing winds being off the land, and the long S. Westerly swell outside, being deflected over from Hunter's Islands toward the coast on the North side of Bass' Strait, leaves the southern shore generally in a smooth sea. CIRCULAR HEAD, in lat. 40° 43′ S., lon. 145° 15′ E., may be seen about 8 or 9 leagues, and it is the first projecting headland to the eastward of Cape Grim, the N. Western extremity of Van Diemen's Land, and the low sandy South island of Hunter's Group lies between them, united to the main by shoals. Table Cape, situated 8 leagues E. S. Eastward from Circular Head, is in lat. 40° 56′ S. and has a flat aspect with steep cliffs, which may be discerned 12 leagues, and Rocky Cape lies nearly midway between them. From Table Cape westward, the country appears sterile, and may be *considered* low and level at the western part, rising gradually to the eastward. From Table Cape to Port Dalrymple, the inland country is mountainous, generally of fertile aspect, and well covered with wood down to the sea. About 5 leagues to the eastward of Table Cape, a round hill stands close to the shore; and a few miles beyond it, a range of mountains extending from S. Westward, terminate abruptly in a bluff head, but this head projects not beyond the line of the coast. North coast of Van Diemen's Land. Geo. site of Circular Head.

From hence eastward to Port Dalrymple, the land near the sea is generally low, and there is a bight about 5 miles to the West of that port.

On each side of Port Dalrymple, ranges of hills project from the inland mountains nearly to the sea, but from thence eastward to Cape Portland, the coast may be called low, with a sandy beach in most places. A stony head, situated 10 miles to the N. Eastward of Port Dalrymple, is the principal exception, which although not high, may be known by a small rocky islet bearing N. W. by W. from it by compass, distant 2½ miles, and being the only stony projection in this part of the coast.

PORT DALRYMPLE, seems to be the only harbour on the North coast of Van Diemen's Land, and Low Head, on the East side of the entrance, is the projecting part of a piece of sloping land, situated in lat. 41° 3½′ S., lon. 147° 11′ E., by mean of some lunar observations taken by Captain Flinders. The entrance of this port is not easily discerned, but the chains of hills projecting from the inland mountains on each side of it, and ap- Geo. site of Port Dalrymple.

proaching nearer to the sea than they usually do in its neighbourhood, will help navigators to find it. When the entrance bears to the S. Eastward, that chain which comes to the back of Low Head, appears as a cluster of irregular hills, with the blue tops of the higher mountains peeping over them. The ridge on the West side of the port, has a similar appearance, being formed by peaked hills of uncouth shape; and the stony head to the eastward, mentioned above, is the only projection on the East side of the port, that is not sandy.

This port is difficult of access, and as most of the shoals are covered at ½ tide, the best time to enter it, is with, or a little before the first of the flood, keeping a good look out for discoloured water from the mast-head.

Hebe's Reef. The Hebe's Reef, on which the ship of this name was wrecked on the 15th of June, 1808, is the outermost known shoal off the entrance of Port Dalrymple, bearing from the flagstaff on Low Point or Point Clarence, W. ¾ N. by compass about 5 miles distant, and probably extends farther to sea. The Hebe got on the shoal at high water, and had not less than 2½ fathoms on it, the swell being rather high at the time; but at low water, spring tides, the sea upon it appears discoloured. The Hebe's Reef, bears from the western reef about N. by W. true bearing, distant about 2 miles; and the outer breakers on the western reef, bear West by compass from the flagstaff.

Western Reef.

Captain Kent, of H. M. S. Buffalo, placed 3 beacons on the shoals at the entrance of this port, and has given the following directions for going in.

Directions for sailing into Port Dalrymple. Steering in for Port Dalrymple, and being within 1½ mile of Low Head or Point, and a little to the westward of it, look out for a beacon with sheers on its top, which is placed on the East part of the easternmost of the western shoals. Bring this beacon on with the centre of the harbour, that is, the opening between the trees as high up as Green Island, steering by compass S. E. by S. until you are within ½ a mile of the beacon; this will keep you clear of the rocks and shoals to the westward, part of which are always dry, and also of the patches of weed which stretch out from Low Head. Look then out for a beacon placed on a *half-tide* rock, situated a full cable's length from the inner part of Low Head, toward which stand over, observing to give the sheer beacon a good birth, because a patch lies a large cable's length eastward from the beacon, having only 1 fathom on it at low water; and there is 2¾ fathoms between them. The half-tide rock beacon, is a cask placed on an iron bar about 14 feet high, and the West part of the rocks may be approached within 30 or 40 yards in any ship. From hence you may run up to Lagoon Beach, taking care not to haul too much to the eastward, as there is a patch of 2¾ fathoms more than a cable's length above the beacon. As Lagoon Beach is an exposed place, it is best to run up to Outer Cove, or above it, before anchoring, for the bottom between Low Head and Outer Cove, is thought to be either a smooth sloping rock, or loose stones. The Buffalo drove upon the eastern shoals with 2 bower anchors a-head, and both these anchors were hove up the bank from 15 to 2 fathom: the sheet-anchor laid out with a whole cable, and backed by the stream-anchor with 40 fathoms of cable to it, was also hove home a little, but ultimately took the ship off.

In standing up the harbour, when you are abreast of Lagoon Beach, keep the low part of Low Head a sail's breadth open to the westward of the half-tide rock beacon, which will lead you in mid-channel until you are up as high as the eastern shoals; you can then incline over to the westward, as the harbour here, takes a considerable bend that way, till you are up as high as the shoals which lie to the S. W. of Green Island. These half-tide shoals are very dangerous, having within a boat's length of them, 5, 7, and 9 fathoms; they may however, be easily avoided, by looking out for a small sandy beach about ½ a mile above Outer Cove on the same side, bearing from the N. E. part of Green Island S. E. by E. by compass: take care to keep some part of this beach open to the eastward of Green Island, for if you shut it in, you are on shore immediately. Having passed those shoals, stand over to the N. W. point of Outer Cove, which is nearly steep to, and from thence into the Cove,

where you can anchor in 9 fathoms sandy bottom, and moor with ½ a cable each way. In standing for the Cove, keep near the N. W. point, in order to avoid the Middle Shoal, over which the tides set strong; there is a beacon with a vane on its top, placed on this shoal. OUTER COVE, is not a very good place for a large ship, because it dries a long way from the head; besides, there is little room, with eddy tides setting in every direction, and difficulty may be experienced getting out of it, with Westerly and W. N. W. winds.

As the prevailing winds are from N. W. to S. W., a ship may wait long before a leading wind is got to carry her out of the harbour; she will, therefore, probably be obliged to *kedge*, or *back* and *fill* out with the tide. During 24 days stay in this port, Captain Kent, never found the velocity of the tide above 2½ or 3 miles per hour, in the channel betwixt Green Island and Outer Cove; but it seems to have been greater when Captain Flinders partly explored this harbour, after he made the discovery of it in the Norfolk sloop.

The depths among the patches of weed which extend from Low Head over toward the western shoals, are generally from 3 to 2 fathoms; above Green Island, the bottom is all mud. Firewood abounds in this port. Fresh water may be got at the back of the beach near Low Head, and there is excellent water in the western arm of this large river, with probably safe anchoring places for ships; but no vessel ought to enter either that, or the passage toward the Middle Arm, without first examining the channels by boats.

The rise of tide is from 6 to 8 feet in the springs, high water on any day about a ¼ hour before the moon passes over the meridian, and the ebb runs out near 7 hours; the tides set irregularly on, over, and through among all the eastern and western shoals, at the entrance of the port. The flagstaff on Low Head, may be discerned a long way off, from which the Sheer Beacon is said to bear S. by W. ½ W. distant 1 mile, and the outer 2 beacons E. N. E. and W. S. W of each other.

This port, seems not to be a convenient place for a large ship to enter, on account of the intricate passage between the shoals. The variation about 6 leagues to the westward of its entrance, was 8° Easterly in 1798, and 8½° East on the shore at Port Dalrymple.

HUNTER'S ISLANDS, situated near the N.W. extremity of Van Diemen's Land, form a group of 3 large islands, with some smaller ones, and many islets or straggling rocks, fronting them to the westward: they have a barren aspect, and there *possibly* may be some rocks or dangers to the westward of them, not yet explored. The Black Pyramid in lat. 40° 33′ S., lon. 144° 22′ E., is the westernmost islet of this group. ALBATROSS ISLAND, is the N. Westernmost, situated in lat. 40° 25′ S., lon. 144° 35′ E., and may be seen about 6 leagues. A ship steering for Bass Strait with a southerly or S. W. wind, may keep in lat. 40° 25′ S. to fall in with Albatross Island, after which, Three-Hummock Island will immediately appear to the eastward, and remove any doubt concerning the land. But it seems not advisable to enter this channel, except in day-light with a good look out, as Reid's Rocks extend in patches from lat. 40° 13′ to 40° 18′ S. bearing S. by E. 3½ or 4 leagues from the S. E. point of King's Island; and although there is 30 fathoms water between these rocks and the point, this passage, is also contracted by rocks and foul ground, projecting a considerable way from the South end of King's Island.

Hunter's Islands.

Geo. site.

To sail into Bass' Strait.

The channel to the northward of King's Island, is therefore preferable, being clear of danger, excepting the Harbinger's Reefs, 2 large patches of rock distant 5 or 6 miles to the West and N. W. of the North point of King's Island, already described in volume first of this work; the sea generally breaks high upon them, and there is a passage between them and King's Island. The North point of the latter, bears about S. S. E. from Cape Otway, leaving a passage of 13 or 14 leagues between that Cape and the Harbinger's Reefs, with 52 fathoms sand and broken shells in mid-channel. About 8 leagues East of King's Island, the variation was 8° 30′ East in 1802.

Captain Lamb, of the Baring, on the 28th of August, 1815, in entering Bass' Strait,

passed near to Cape Otway, and found it fronted by a reef projecting out 1½ mile from the pitch of the cape; the sea broke high upon it, but none of the rocks appeared above water.

Crocodile Rock.

The Crocodile Rock, was seen by the Wellington, on the 25th of January, 1816; when it bore S. by E. 5 or 5½ miles, Curtis Island bore S. E. ¼ S. 4 leagues, Rodondo W. N. W. 7 or 8 miles, easternmost of the Moncur Islands South, Devil's Tower S. E. ½ S., and Hogan's Group E. by N.

The North coast of Van Diemen's Land, from Circular Head eastward to Port Dalrymple, is clear of islands, except 1 or 2 small islets near the shore; but from hence to Cape Portland, several islands lie near the coast. The westernmost of these is small, called Tenth Island, in lat. 40° 56′ S., about 4 leagues E. N. Eastward from Low Head, or eastern extremity of Port Dalrymple, and 3 miles distant from Stony Head which is the nearest shore. The next called Ninth Island in lat. 40° 51′ S. lies about 4 or 5 leagues E. N. Eastward from Tenth Island, and nearly 2 leagues from the Double Sandy Point, or nearest shore.

Geo. site of Waterhouse Island.

WATERHOUSE ISLAND in lat. 40° 48′ S., lon. 147° 32′ E. distant 4½ or 5 leagues to the eastward of Ninth Island, is the largest of those which lie near this part of the coast, having a channel about 2 miles wide between it and Point Waterhouse, with 5 and 6 fathoms water, but it seems only fit for small vessels; there is also a safe channel between the former islands and the coast. From Point Waterhouse to the N. W. extremity of Cape Portland, the coast forms a deep bay, about 5 or 6 leagues in breadth, which is considered to be clear of danger, but quite open to N. W. and Northerly winds.

Furneaux's Islands.

FURNEAUX'S ISLANDS, separated from Cape Portland by Bank's Strait, form a great chain, extending about N. N. W. and S. S. E., and are situated at the S. E. part of Bass' Strait.

Geo. site of Cape Barren.

Cape Barren, the S. E. extremity of the island of this name, which is the southernmost large island, is in lat. 40° 25′ S., lon. 148° 26′ E., and the peak on this island, with the ridge of hills that extends nearly to the cape, may be discerned about 10 leagues off. Soundings stretch a considerable way out from these islands, over a sandy bottom; their western sides generally present a steep rocky shore to the prevailing winds and sea, but their eastern sides usually slope down gradually into a sandy beach. Clark's Island, is the southernmost of the chain, its South extremity being in lat. 40° 34′ S. forms the North boundary of Banks' Strait, which is about 3 or 3½ leagues wide between it and Swan Islands, fronting Cape Portland. Armstrong's Channel, formed between the South coast of Cape Barren Island and Clark's Island, is narrow, with shoals on each side; and although navigable by small vessels, ought not to be chosen in a large ship, as in some parts, the depths are only 2½ or 3 fathoms.

Preservation Island, situated at the western entrance of Armstrong's Channel, has good anchorage in from 3 to 5 fathoms, off the sandy beach on its eastern side, open only to southerly winds. The variation here was 9° easterly in 1802.

Great Island.

Great Island, the largest and northernmost of the chain, is very high on the West side, formed of barren peaked hills of various shapes: betwixt it and Cape Barren Island, there is a narrow strait, with many rocks and islets in it; and Babel Island, lies contiguous to the

Geo. site of the Sisters.

East point of Great Island, and other islands lie near it to the westward. The Sisters, near to, and fronting the North end of Great Island, resemble each other, and may be seen 8 or 10 leagues; and the North Sister is in lat. 39° 38′ S., lon. 147° 56′ E. Craggy Isle is small, situated to the N. W. of the North end of Great Island, and nearly in a direct line from its northern extremity toward Kents' Groups, about mid-way between them; and to the N. Westward of Craggy Isle, lies a high rock in lat. 39° 36′ S., called by some navigators Wright's Rock: betwixt this rock and Kents' Groups, or betwixt it and Craggy Isle, or between the latter and the Sisters, the passage is equally safe in favorable weather, but the first

Tides.

is more capacious than the others. The tide, which runs strong through the narrow passages among these islands, rises from 3 to 6 feet, and the time of high water is about 10½ hours

after the moon passes the meridian. The flood here, comes from the eastward, and at the western part of Bass Strait, it comes in from the westward; whereby, the direction of the tides is irregular in several places, and they are weakest in the middle of the strait.

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## *PORTS, or PLACES of SHELTER, on the S. E. COAST of NEW SOUTH WALES; with SAILING DIRECTIONS to, and from PORT JACKSON.*

Northern coast of Bass' Strait.

THE northern boundary of BASS' STRAIT, from Wilson's Promontory eastward, is low near the sea, fronted by a sandy beach of great extent, and stretches in an E. N. E. direction to Cape Howe. A ridge of hills inland, converges gradually toward the sea, until it joins the hills between Ram Head and Cape Howe, where the coast presents some rocky points of land.

Geo. site of Cape Howe, adjacent coast.

Twofold Bay.

CAPE HOWE, in lat. 37° 30′ S., lon. 150° 7′ E. is a low point of rocks and sand, with hills behind it, and forms a projecting part of the coast, which from hence takes a direction to the northward.* Green Cape, of smooth sloping aspect, bears North by compass from Cape Howe about 4½ or 5 leagues; a little farther northward, in lat. 37° 4′ S., TWOFOLD BAY is situated, the shores of which are not high, but consist of steep heads, rocky points, and sandy beaches, and the outer North and South points of the bay, have dry rocks close to them. The land at the back of this bay, is more hummocky than any of the parts contiguous, and a round mount situated to the S. W. about 5 leagues inland, may be seen at 15 leagues distance, above the other hills.

Twofold Bay, is a good place for whalers or other vessels to take shelter in, during blowing weather.

Snug Cove.

SNUG COVE, lies at the back of the steep stony head on the North side of the bay, where a vessel may be land-locked in 5 fathoms sandy bottom; and there seems to be room for 2, or perhaps 3 ships in it, but the water shoals suddenly toward the head of the cove. At the anchorage on the South side of the bay, a vessel cannot be land-locked in more than 3 fathoms, and in deeper water she would be exposed to an N. by E. wind. Wood abounds all round the bay, but fresh water is only found in swamps near the anchorage; large boats, may enter the lagoon at the East end of the great South beach, at ½ flood. The tide rises 6 or 7 feet, high water about 3 hours before the moon passes the meridian.

Geo. site of Cape Dromedary; coast adjoining.

Geo. site of Cape St. George.

CAPE DROMEDARY, is a projecting headland in lat. 36° 18′ S., lon. 150° 9′ E., having a double mountain over it called Mount Dromedary, and a small island to the S. Westward; the coast between Cape Howe and this headland, is bold to approach within a reasonable distance, with soundings fronting it to the distance of 3 or 4 leagues. The coast from Cape Dromedary, extends North and N. by E. to Bateman Bay in lat. 35° 39′ S., which has several islands in it. Point Upright, lies about 2 leagues to the N. E. of this bay, and from thence, the coast stretches N. Eastward to Cape St. George in lat. 35° 10′ S., lon. 150°

* The East coast of New Holland, from Cape Howe to the northern extremity of this extensive country, was explored by Captain James Cook, in 1770; and the southern coast, and great part of the northern coast, has been surveyed by Captain Matthew Flinders.

50′ E. having several isles contiguous to the shore, and a remarkable mount called the Pigeon House, situated a little inland, in lat. 35° 30′ S.

Geo. site of Jervis Bay.

JERVIS BAY,* entrance, in lat. 35° 7′ S., lon. 150° 52′ E., is formed betwixt Bowen's Island (which touches the northern point of Cape St. George) and the peninsula called Long Nose, to the northward. It is about 1½ to 2 miles wide, with soundings of 15 and 20 fathoms; and inside, a spacious bay or harbour opens, extending North and South about 3 or 4 leagues, and about 2 leagues wide. Excepting where reefs project from some of the points, this bay is clear of danger, having regular soundings from 14 to 10 fathoms, decreasing to 7 or 8 fathoms near the shores on either side, with 2 inlets or rivers at the northern part. There is fresh water on the western side of the bay, betwixt the inlet and Cabbage Tree Point to the southward; but the best birth to anchor is in 7 or 8 fathoms, off a long sandy beach where a small bay is formed at the N. E. part of the harbour. Here, a ship will be land-locked, and sheltered from all winds. The North point of the entrance is moderately elevated, and rises perpendicularly from the sea; the course into the bay is about W. N. W., then round to N. W. and northward. There is room for ships of any size to work in or out, observing to give a birth to a rock that lies a large mile inside of the North point of the entrance, and nearly 1 mile distant from the eastern shore of the bay. The reef projecting from Rocky Point, must also have a birth, which lies to the northward of the rock last mentioned.

Geo. site of Red Point; coast adjacent.

RED POINT, in lat. 34° 29′ S., lon. 151° 14′ E., has some isles to the southward of it, and the coast betwixt it and Jervis Bay, is safe to approach; but there is a shoal in the bay to the northward of Red Point. Betwixt this point and Point Solander, the coast forms a small concavity, having a range of whitish cliffs about 3 leagues to the southward of the latter, extending some distance farther South. The land over these, is moderately high and level, having upon it a small clump of trees.

Geo. site of Cape Banks.

CAPE BANKS, in lat. 34° 0′ S., lon. 151° 23′ E., forms the North head of the entrance into Botany Bay, and Point Solander bounds it to the southward. The narrowest part of the entrance is about ½ a mile wide, and stretches in a N. Westerly direction, the depth of water decreasing from 16 or 18 fathoms outside, gradually to 6, 5, and 4 fathoms inside of the bay. To sail into this bay, keep about mid-channel betwixt the heads until fairly within them, then haul over a little to the northern shore, and anchor in 5, 6, or 7 fathoms.

To sail into Botany Bay.

Around the bottom and sides of this extensive bay, the water is very shoal, generally from 4 or 5, to 10 or 12 feet: although the anchorage fronting the entrance, is of considerable extent, where ships may lie in from 4 to 7 fathoms water, there is no shelter from easterly winds; and when these blow either from the N. E. or S. E. quarters, a heavy sea rolls into the bay, rendering the anchorage at times unsafe. Fresh water is also scarce, on the shores that form the lower parts of the bay.

Port Jackson.

PORT JACKSON, where the first English settlement was established on this coast, on the 25th of January, 1788, is 1 of the best and safest harbours in the world, and a stranger may go into it with ease, by conforming to the following directions, chiefly by Captain John Hunter;† who made an excellent survey of this spacious port, and was afterward governor of the colony.

Geo. site;

The entrance of Port Jackson is in lat. 33° 50′ S., lon. 151° 25½′ E. by mean of a series

* This bay was discovered by Lieutenant Bowen, on the 19th of August, 1791, and afterward explored by Mr. Matthew Weatherhead, of the ship Matilda, employed in the South Whale Fishery.

† Afterward, Admiral Hunter.

of lunar observations, taken by Captain Hunter and Lieutenant William Bradley, and when 6 leagues from the land, there is no particular marks by which it may be known; the latitude is the best guide to this port, or to any other upon this coast, and soundings generally extend 4 or 5 leagues off.

directions for sailing into it.

In the winter months, there is much blowing weather on this coast, and as the gales from seaward prevail often between N. E. and S. E. it is prudent not to borrow too close to the shore, until in the latitude of the place. When in lat. 33° 50′ S., steer in for the coast, which here, extends about N. by E. ½ E. and S. by W. ½ W.; the entrance of the harbour will shew itself when you come near, by the heads on each side, which are high steep perpendicular cliffs, of a light reddish colour, having soundings from 15 to 12 fathoms between them. Although hard gales sometimes blow from seaward, yet strong westerly gales often prevail in winter, making it necessary to keep near the coast at such times; otherwise, much time may be lost getting in with the land, during the prevalence of these winds.

When therefore the wind blows strong from the westward, a ship should after passing Cape Howe, keep within 3 or 4 leagues of the coast, unless there be cause to apprehend a change of the wind.

A ship may run in betwixt the Heads without fear, which are distant from each other 1¾ mile; for the passage is clear, the shore pretty steep to, on both sides, and as the sea breaks on the rocks, even in fine weather, it will shew any that may be detached a little way from the shore. Steer in between the Heads for a high bluff point steep to, called Middle Head, or Cape, until you open a very extensive arm of the harbour to the southward. This arm or branch lies S. W. by compass, and if the wind be fair for sailing up it, along either shore, haul round the South or Inner Head, which is a low rocky point, and forms the easternmost or outer point of this arm. Give it a birth of ⅔ds of a cable, then steer right in for the first sandy cove above it, called Camp Cove; keep at a convenient but small distance from the shore, in 3½ and 4 fathoms, because fronting this cove there is a patch of rocks nearly in mid-channel, visible at ½ tide. The water shoals gradually toward this patch all round, upon a smooth sandy bottom, for it is rocky only about ½ a cable's length from the dry part. You may keep near the upper point of Camp Cove, in 6 and 7 fathoms, and from thence, steer directly up the harbour.

If you intend to proceed along the western shore, and to leave the patch of rocks or Middle Ground to the eastward; steer in as before for Middle Head until it is within a cable's length, then steer for the next point above it, on the same side, which must have a birth, because rocks project from it rather more than ½ a cable's length. This is the best channel, being a little wider than the eastern channel, and the depths in it are 4, 4½, and 5 fathoms. Having passed this second point on the western side, the channel is safe from shore to shore, and you may run or anchor in any part of it at discretion.

If a stranger come in between the Heads with a southerly wind, it would be imprudent for him to venture to work up past the Middle Ground, but he may anchor near the Middle Head, or in the North part of the harbour with safety; pilots come off to ships when the signal is made for them, and the flagstaff at the entrance of the port, will be discerned from a considerable distance in the offing.

Sidney Cove.

SIDNEY COVE, the chief settlement and seat of government, is about 5 miles within the Heads, on the South side of the Great Southern Arm of this extensive harbour; which abounds with inlets and coves, where ships may moor and careen. From the Middle Ground up to Sidney Cove, there is no hidden danger; the depths are mostly from 7 to 10 fathoms in mid-channel, and near the shore in some places, 4, 5, and 6 fathoms. The tide rises between 6 and 7 feet on the springs, high water at 8¼ hours on full and change of the moon. Variation of the compass 8½° E., in 1788.

If a ship running for Port Jackson, should happen to be uncertain of her latitude, and

fall in with the land on either side of it in blowing weather, she may take shelter in Botany Bay, or in Broken Bay, as circumstances require; for the former being about 4 leagues to the southward, and the other about 5 leagues to the northward of Port Jackson, are of the utmost consequence for ships which may happen to be in bad condition, and unable to keep off shore.

Winds and weather.

On this part of the coast, and round Van Diemen's Land, there is much stormy weather in the winter months, from April or May to October; but in the summer months, the weather is generally fine, with thunder, lightning, and strong squalls at times. If at any time lightning is seen in the lee part of the horizon, a pretty severe squall may be expected from that quarter. The winds in the vicinity of Port Jackson, blow more from the sea than from the land, in both seasons. The barometer generally rises with S. E. and easterly winds, which bring rainy weather from the sea; and it falls with westerly winds off the land, although they are accompanied with settled weather.

Winds and currents on the East coast of Terra Australis.

WINDS AND CURRENTS, on the East coast of Terra Australis, as experienced by Capt. Flinders, are as follows.

From Cape Howe northward, S. E. winds prevail in summer, or from the beginning of October to the end of April, with land and sea breezes near the shore, and fine weather. But far South of the tropic, South or S. W. gales occasionally happen, and strong breezes between North and N. E., bring heavy rain, with thunder and lightning, which are usually of short duration. A sultry land wind from N. W. in summer, is commonly followed by a sudden gust between S. E. and S. S. W., against which a ship should be guarded if near the coast. At such times, the thermometer at Port Jackson, has been known to fall from 100° to 64° in less than ½ an hour.

In winter, from May to September, westerly winds prevail, generally attended by fine weather: the gales in this season, blow from seaward, between N. E. and South, and bring rain; nor is there any settled weather in winter, with the sea winds, and even when between North and N. W., there is often rain, though the wind be usually light in those quarters.

While the prevailing winds are from S. E. in summer, and S W. in winter beyond the tropic, the current almost constantly sets to the South, from 1 to 1½ miles per hour, its greatest strength being opposite to the points of land which project farthest out, and its limits may be considered at from 4 to 20 leagues off the coast. Farther out, there seems to be no regular current, and close in shore, especially in the bights, there is commonly an eddy current setting northward from ¼ to 1 mile per hour. At the southern parts of the coast, its strength is greatest, and toward Cape Howe, it takes a direction to the eastward of South; whereas, in other places, it usually follows the line of the coast.

This exposition of winds and currents beyond the tropic, shews the advantage of keeping at not more distance than 3 or 4 leagues from the land, when sailing northward, and to touch on the coast; but in winter, this must be done with caution, because then, easterly gales often happen. And on this East coast, it may be taken as a general rule, that a rise of the barometer indicates either an increase of the present wind, or that it will veer more to seaward; and a fall denotes less wind, or a breeze more off the land. The barometer rises highest with a S. E. wind, and falls lowest with a N. W. wind. N. E. and S. W. are points of mean height.

To benefit by the current in sailing southward, a ship should not come nearer to the coast than 5 or 6 leagues, unless to the projecting points; and if the distance is increased to 10 or 12 leagues, so as to have the land only visible, an advantage would be gained, and no danger then to be apprehended from the gales.

While westerly winds prevail on the southern parts of the East coast, the S. E. trade blows with most regularity within, and close to the tropic, producing sea and land breezes near the shore, with serene weather; and the farther you go northward, the longer does this

fine weather continue, till near Cape York, and at the entrance of Torres Strait, it commences in March or early in April, and extends to the middle or end of November.

On the North coast of Terra Australis, the S. Easterly monsoon prevails from March or April to November, often veering to East, or even to N. E., producing fine weather, with land and sea breezes near the shore. The N. W. monsoon sets in about the beginning or middle of November, and continues till near the end of March. This is the season of heavy rains, thunder, and lightning, and is thought to be the most unhealthy period. Winds on the North coast.

BROKEN BAY ENTRANCE, in lat. 33° 34′ S., lon. 151° 27′ E., may be known by the land projecting from the North Head, to a considerable distance eastward; the distance between the North and South Heads is 2 miles, with depths of 12, 10, and 8 fathoms, decreasing to 7, 6, and 5 fathoms, as you sail up the bay, which is large and clear of danger. Geo. site of Broken Bay.

The entrance of the northern branch, turns round inside of the North Head, which is shoal, and navigable only by boats or small vessels; for the channel into it, is rendered very narrow, by a long spit of sand extending from a low sandy point on the West side of the entrance, on which the sea breaks high when the wind is at eastward.

The entrance of the southern branch, called Pitt-Water, is situated a little inside of the South Head, and forms a good harbour, although the entrance is contracted by a shoal bank, which extends from the eastern point full $\frac{2}{3}$ across. The West point of this branch is high, steep, and rocky, and pretty bold to approach; keep it and the western shore a-board, and steer right up the branch, where the depth in the narrows is only 3 fathoms at low water, for a short space; but in running up, you soon deepen to 4, 5, 6, and 8 fathoms. The depths decrease gradually to the shoal that narrows the entrance, and when you are above the second point on the western shore, there is plenty of room and good depths of water; you may then run up in mid-channel without fear, both shores being pretty bold to, except from some of the points, shoal water extends to a small distance. Sailing directions.

There are several coves in this branch, where a ship might lighten and careen, with abundance of wood, and fresh water in various parts of the harbour; fish may be caught in all the sandy bays.

The S. W. or western branch, is the best harbour for large ships, and it is separated from the southern branch by several rocky points, with steep high land over them, between which, there are some small sandy bays. Fronting the mouth of this branch, there is a high rocky island of small extent called Mount Elliot, which at the East end is of great perpendicular height, and answers as a good mark for any part of the bay. It is advisable for a stranger coming in here to be sheltered from a gale of wind, to steer for the island, which may be passed on either side, but in steering for the S. W. branch, the direct passage is to the southward of the island. Keep mid-channel between it and the South shore, which is bold to approach within 2 cables' lengths. In the way up, you will see a branch stretching to the N. W. and when thus high, you are above a bank or Middle Ground having 16 feet on it at low water, with a gradual decrease of depth toward it. This bank may be passed on either side, by keeping near the shore; on the North side of it there is 5 fathoms, but the channel along the southern shore has most room and deeper water, where a ship may anchor well sheltered and land-locked. If you wish to go higher up the S. W. branch, when above the middle ground, keep in mid-channel, and the least water will be 5 or 6 fathoms several miles higher. Some inlets extend from this branch, with good depths of water in them for ships.

If you intend to enter the N. W. branch, when above the Middle Ground, steer for the larboard shore of the entrance, and keep near it for some distance up, because a shoal stretches $\frac{1}{3}$ of the distance over from the starboard shore. When clear of this shoal, the channel turns from the larboard, into the bay on the starboard shore; and then it takes a northerly and afterward a westerly direction, betwixt that shore and some islands on the op-

posite side. This N. W. branch, has several inlets stretching a great way into the country, and Hawkesbury River falls into it from the westward; this river is navigable by boats and small vessels a great way up, the depths being from 2 to 6 or 7 fathoms about 40 miles above the sea. The ebb tide runs pretty strong in the river, and the flood rises about 6 to 8 feet; but being situated in a valley betwixt a chain of mountains on each side, the level land that forms the upper part of its banks, is liable to destructive inundations. These are occasioned by heavy rains falling upon the mountains, which afterward rush down the valley in torrents, sometimes swelling the river from 20 to 30 feet perpendicular height above its common level, and destroying every thing that is opposed to their course.*

Hawkesbury River.

To sail from Port Jackson by the southern passage.

SHIPS bound from PORT JACKSON to Europe or to Hindoostan, may proceed by the southern passage, through Bass' Strait or round Van Diemen's Land, if they depart between August and April: in the months of January, February, and March, more particularly, S. Easterly winds frequently prevail about Van Diemen's Land, and near the South coast of New Holland, enabling ships to make great progress to the westward. But they ought to preserve a considerable distance from the South coast, in order to benefit by every change of wind that may happen in their favour, and to avoid being driven too near the land by southerly or S. W. gales, which are liable to happen at times.

The strong westerly gales which prevail here in winter, render the southern passage difficult; yet it appears to be practicable even in the winter months, by ships which are in good condition, and sail well.

The ship Alexander, Captain Norman, left Port Jackson in November, or December, bound to Bombay, and got easily to the westward by the southern passage.

The ship Lady Barlow, Captain M'Askill, came through Bass' Strait in January, when bound from Port Jackson to London, about 1806, and proceeded to the westward with variable winds, frequently at East and S. Eastward. In lat. 28° S., they got the S. E. trade wind, and Captain M'Askill thinks, the passage from Port Jackson to Bengal, would have been performed in 2 months, had he been bound there.

A Whaler, proceeded lately through Bass' Strait, and beat to the westward in June, but she experienced much blowing weather. Captain Lamb, in the Baring, from Port Jackson bound to Bengal, passed to the westward through Bass' Strait in 2 days, early in November, 1815; nor in August, with the winds he previously experienced, would there have been any difficulty in getting to the westward through the strait, and round Cape Leeuwin. The Guilford, left Port Jackson on the 30th of March, 1812, passed round Van Diemen's Land, went as far as lat. 48° S., where with N. E., East, and S. Easterly winds, she speedily got to the westward, entered into the S. E. trade in lat. 26½° S., and arrived on the 31st of May in the River Hoogly, after a passage of 2 months from Port Jackson.

To sail to Europe by the Cape Horn Passage.

SHIPS bound to EUROPE in the SUMMER MONTHS from PORT JACKSON, will generally make a quicker passage round Cape Horn than by any other route, for the prevalence of westerly winds in high southern latitudes, are favorable for that passage. Captain Hunter left Port Jackson in H. M. S. Sirius, on the 2d of October, 1788, stood to the South and S. Eastward until in lat. 50° S., and kept mostly betwixt this parallel and lat. 56° S., in running to the eastward. In lat. 57° S., lon. 76° W. of Greenwich, they saw many ice islands on the 23d of November, passed Terra del Fuego on the 26th, in sight of the land, and sailed to the N. Eastward constantly among ice islands, until the last piece of ice was seen on the 21st of December, in lat. 44° S., lon. 35° W. Some of them were small, others 2 or 3 miles in circumference, and about 300 feet of perpendicular height. Had it

* Much of the land, corn, cattle, sheep, &c. belonging to the colonists on the banks of Hawkesbury River, were destroyed by 1 of these torrents a few years ago, and many of the inhabitants swept away.

not been for the short nights at that time in high South latitude, where scarcely an hour could be called dark, considerable danger would have been experienced in sailing among those vast numbers of ice islands, which were almost constantly seen on both sides of the ship. At this time, the sea was overspread with them from South Georgia to lat. 46° S., and they seemed to have been drifted from that island, or from Sandwich Land, by southerly winds; and were probably separated from the land in the spring, or by a storm during the winter. After passing Cape Horn, the Sirius had mostly N. Easterly winds 15 days, she nevertheless arrived in Table Bay, at the Cape of Good Hope, on the 1st of January, 1789, after a passage of 91 days from Port Jackson.

Lieutenant Ball, in H. M. S. Supply, sailed from Port Jackson on the 26th of November, 1791, kept in lat. 50° to 57° S., passed in sight of Cape Horn on the 6th of January, 1792; southerly winds continued after rounding the Cape and Staten Land, with which they steered to the northward; and although some N. E. winds were afterward experienced, they arrived at the Island St. Catherina, on the coast of Brasil on the 1st of February, after a passage of only 67 days from Port Jackson.

Although this ship was as far South as the Sirius, in rounding Terra del Fuego, no ice islands were seen during the passage, which difference might have been occasioned by the Supply passing it later in the season. The southerly winds also enabled her to steer a northerly course after rounding Cape Horn, by which she avoided that part of the sea adjacent to South Georgia, where the greatest quantity of ice is generally found.

The Minstrel left Port Jackson on the 6th of July, 1813, steered to pass to the North of New Zealand, but a heavy gale of wind which suddenly changed from N. N. E. to West, drove her very close to the shore, a little southward of Cape Maria. On the 16th, after the gale moderated, she cleared this cape, and steered to the eastward, gradually increasing the lat. to 40°, 50°, and at last to 60° when she approached Cape Horn; the prevailing winds were strong from W. N. W. to W. S. W., sometimes veering to North, N. E., S. E., and South, but these winds were of short duration. She passed Cape Horn on the 29th of August in lat. 57° 46′ S., distant 130 miles from it, with strong S. W. winds; afterward, passed about 120 miles to the eastward of Falkland Islands on the 2d of September, and made the coast of Brazil near Rio Janeiro on the 16th of September.

Other ships which have pursued the route from Port Jackson round Cape Horn, have in general made favorable passages into the Atlantic Ocean; but as stormy weather and high seas may be expected at times in high southern latitudes, this route ought not to be chosen in a *leaky* or *crazy* ship; and those who pursue it, ought particularly to keep a good look out for ice islands in the vicinity of Cape Horn, and after passing it, to the eastward.

A quick passage from Chili to Bengal.

Some ships, have made a speedy passage from South America across the Pacific Ocean, to India: Captain Peircy, sailed from Valparaiso in January, 1814, and after crossing that ocean, entered the China sea by the Bashee Passage, then proceeded through Malacca Strait, and arrived in Bengal River in 2 months and 26 days from Valparaisa.

Ships which pass far to the southward of Van Diemen's Land, or New Zealand, ought to keep a good look out, for probably, some undiscovered islands or dangers may exist in that part of the ocean. Those already known are, MACQUARIE'S ISLAND, in lat. 54° 42′ S. lon. 159° 45′ E. of considerable extent North and South, having about 7 or 8 leagues to the N. N. Eastward of its North extremity, some rocky islets called the Judge and Judges Clerk. About the same distance to the southward of its South extremity, other rocks called Bishop and Clerk, are situated in about lat. 55° 15′ S. CAMPBELL'S ISLAND, in lat. 52° 32′ S., lon. 169° 30′ E. is small, and was discovered about 8 years ago, by Captain Walker, employed in the seal fishery by Mr. Campbell, then residing at Port Jackson, and Macquarie's Island was also discovered by him.

Geo. site of Macquarie's Island.

Geo site of Campbell's Island.

LORD AUCKLAND'S ISLANDS, discovered by Captain Bristow, in the Sarah, in

Geo. site of Lord Auckland's Islands.

1806, extend North and South about 6 leagues, their centre being in lat. 50° 44′ S., lon. 165° 0′ E. The large island has a harbour on the East side, called SARAH'S BOSOM, which is formed and secured from the sea by Green Island, and some reefs at the entrance bounding it on the outside. Several islets or rocks lie contiguous to the large island, of which, Adam's Isle is at its southern extremity, and Bristow Rock a few miles to the northward of its N. E. point.

Snares.

The Snares in lat. 48° 10′ S. are 2 small isles, situated nearly on the meridian of Lord Auckland's Islands, about 20 leagues to the S. S. W. of the southern extremity of New Zealand, and there are other islands and dangers nearer to the latter.

Geo. site of Antipode's Island and others.

Farther to the eastward, Antipodes Island is situated in lat. 49° 35′ S., lon. 179° 30′ E., which is small. Bounty Islands lie in lat. 47° 32′ S., lon. 179° 2′ E.; and in lat. 44° 36′ S., lon. 184° 33½′ E., a small group of islands was discovered by H. M. S. Cornwallis on the 16th of May, 1807, thought to lie contiguous to Chatham Island.

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## *SAILING DIRECTIONS from VAN DIEMEN'S LAND, or PORT JACKSON, by NORTHERN ROUTES toward INDIA or CHINA. CONTIGUOUS ISLANDS and DANGERS.*

PREVIOUS to giving directions for any of the northern passages from Port Jackson, it may be useful to state the geographical situations of the islands or dangers which lie nearest to this route.

Geo. site of Lord Howe's Island, and other islands or dangers.

LORD HOWE'S ISLAND, in lat. 31° 26′ S., lon. 159° 0′ E., is of considerable size, and Ball's Pyramid, situated 3½ or 4 leagues to the South of it, is a high rock, with others contiguous. MIDDLETON'S ISLAND, in lat. 28° 13′ S., lon. 160° 31′ E., is small, and a shoal of the same name, is placed in lat. 29° 14′ S., lon. 158° 53′ E. by Captain Flinders. An extensive reef about 3 leagues in length was seen in July, 1815, by the Indefatigable, supposed to be Middleton's Reef, but their time keeper being incorrect, its longitude was not ascertained.

From Port Jackson to Sandy Cape, the coast of New South Wales has few dangers, excepting some near the shore. Those most in the way of ships passing along the coast to the northward, are the Solitary Isles about 3 leagues off shore, in lat. 29° 56′ to 30° 9′ S., lon. 153° 21′ E., having a reef in lat. 30° 11′ S. to the S. W. of the southernmost island.

Geo. site of dangers and headlands on the coast of New South Wales.

Shoals in lat. 28° 7′ S., lon. 153° 39′ E., distant 2½ leagues East of Point Danger, having Mount Warning, a high hill inland to the S. Westward, in lat. 28° 24′ S. A shoal in lat. 26° 58′ S., lon. 153° 28′ E., lies about 2 leagues N. E. from Cape Moretop, and about 11 leagues East of the hills called Glass Houses.

Geo. site of Sandy Cape.

SANDY CAPE, in lat. 24° 42′ S., lon. 153° 17′ E., forms a sandy peninsula, having Hervey's Bay, about 11 leagues wide, and the same depth, on its West side.

Direction of the coast.

The coast, which to the distance of about 4° to the southward of Sandy Cape, lies nearly North and South, with some concavities, from this cape turns to S. S. W. and westward, forming Hervey's Bay, and afterward extends in a N. Westerly direction to Cape York, the southern boundary of Torres Strait; and this part of the coast, being lined by numerous islands and reefs, with the barrier reefs fronting it at the distance of more than 2° in some places, ought to be avoided by all ships bound to the northward. For the barrier reefs commencing a little way to the northward of Sandy Cape, render it prudent to take a departure from this

cape, and to keep to the eastward of its meridian in steering northward between Wreck Reef and the Barrier Reefs. The variation of Sandy Cape was 9° 30′ East in 1803.

CATO'S BANK, in lat. 23° 6′ S., lon. 155° 23′ E., is a dry sand surrounded by breakers, discovered by Captain Flinders, on the 15th of August, 1803. Geo. site of Cato's Bank.

WRECK REEF and SAND BANK, where the Cato and Porpoise were lost on the night of the 15th of August, 1803. in lat. 22° 11′ S., lon. 155° 19′ E., is the central part of a chain of 6 coral reefs, extending nearly East and West from lon. 155° 7′ to 155° 28′ E.; the easternmost is covered with wiry grass, and some shrubs, and called Bird Islet. The rise of tide here was 6 or 8 feet, high water at 8¾ hours; variation 9° 17° E. Geo. site of Wreck Reef.

Farther to the N. Eastward, Booby Shoal is placed by Captain Flinders in lat. 21° 2′ S., lon. 159° 2′ E., and the Bellona's Shoals in lat. 20° 55′ S., lon. 159° 47′ E. Geo. site of Booby and Bellona Shoals.

BAMPTON'S SHOAL, discovered in 1793, by Captain Bampton of the Shaw Hormazier, on his passage from Port Jackson toward Torres Strait and Bombay, extends from lat. 18° 49′ to 19° 30′ S., lon. 158° 2′ to 158° 45′ E. It has the form of a horseshoe, being a narrow coral shoal, of great capacity inside, with a wide entrance from the southward, and having 2 isles with trees on its eastern side; but there is no outlet except at the South part, nor are there any soundings at the mouth of, or in the great bason formed by the shoal, into which the above named ship got in the night, and had great difficulty in beating out of it against the trade wind. Geo. site of Bampton's Shoal.

DIANA'S BANK, in lat. 15° 41′ S., about lon. 150° 30′ E., was discovered by Monsieur Bougainville, in 1768, and BOUGAINVILLE'S REEFS, are placed by Captain Flinders in lat. 15° 12′ S., to 15° 35′ S., lon. 148° 0′ E. Geo. site of Diana's Bank and other dangers.

Exclusive of the foregoing dangers, there probably are others yet undiscovered in the space between New South Wales and New Caledonia, which renders great caution necessary sailing here, particularly in the night.

It is also proper to remark, that although the current sets mostly to the southward along that part of the coast of New South Wales, situated beyond the tropic; yet to the northward of Sandy Cape, outside of the Barrier Reefs, it sets with the trade wind to the N.Westward, generally from ½ to 1 mile per hour, as far as the entrance of Torres Strait. Inside of the Barrier Reefs, there is little current, but usually a kind of tides prevail between them and the coast; although in Torres Strait, there is apparently a N.W. or westerly current during the period of strong S. E. winds. Current.

When the westerly monsoon prevails in the Timor sea, and between New Holland and New Guinea, particularly in November, December, January, and February, no ship ought to attempt the passage through Torres Strait, either to the West, or Eastward; as in these months, dark, rainy, and squally weather, would greatly augment the danger of this intricate navigation, which has never been attempted from the westward at *any time*, nor from the eastward at an unfavorable season. Winds.

WHEN the S. E. MONSOON prevails in the Banda sea, from March to September, small ships drawing little water, would find the route through Torre's Strait more speedy than any other, in proceeding from Van Diemen's Land or Port Jackson, toward Hindoostan or other parts situated to the westward. But this route, through Torre's Strait, ought *probably* not to be pursued except in a *small* ship, or one that draws little water, for it is rendered intricate and dangerous, by the labyrinth of shoals and isles that form it; the whole of the space betwixt the South part of New Guinea and the N. E. part of New Holland, *generally* called Torre's Strait, being strewed over with isles and shoals innumerable. H. M. S. Pandora, in 1791, fell in with the shoals to the eastward of this strait, in lat. 9° 55′ S., lon. 144° 14′ E., close to the East of Murray's Island; a steep coral reef was found to front the To sail from Van Diemen's Land or Port Jackson by Torre's Strait.

sea, affording no passage through it, she therefore worked to the southward along the edge of the reef as far as lat. 11° 25′ S., without being able to discover any safe opening through it to the westward, and here she unfortunately struck on a detached part of the reef, on the 28th of August, and soon went down in deep water. Great part of the crew were saved in the boats, which passed to the westward through a narrow gap in the reef, near the wreck of the frigate, and from hence, they proceeded through Torre's Strait, to the island Timor.

The Shaw Hormazier, bound from Port Jackson to Bombay, in 1793, entered Torre's Strait by the New Guinea side, anchored in 11 fathoms good ground, in a bay at the North part of Wamvax or Darnley's Island, within ¼ mile of the shore; which anchorage is in lat. 9° 28′ S., lon. 143° 40′ E., where 1 of her boats was cut off by the natives, and some of the crew massacred. This ship was 3 weeks getting through Torre's Strait, keeping nearest the New Guinea side;-she was several times in danger, grounded on some of the shoals, and found much difficulty in pursuing her passage through this intricate navigation, which should never be attempted on the New Guinea side of the strait.

Geo. site of Darnley's Island.

Several ships, however, of late years, have got speedily to the westward through this strait, without accident; and to such navigators as may choose to proceed by it, the following directions, *chiefly* by the late Captain Flinders, will be useful.

Directions from Port Jackson towards Torres Strait.

TO SAIL THROUGH TORRE'S STRAIT, June and July is the best time, and it ought not to be earlier than March, nor later than the middle of September: no ship should attempt this route without a chronometer; and from timidity in the commander, perhaps more danger may be apprehended than from temerity.

If at leaving Port Jackson, you do not intend to keep along the coast to Sandy Cape, and to pass to the West of CATO'S BANK and WRECK REEF, steer N. E. by E. by compass at leaving that port till in about lon. 155½° E., and the coast will be 50 leagues distant; steer then North by compass till in lat. 24° S., and in case of an error in the chronometer, do not pass lat. 23° 20′ S., in the night, on account of Cato's Bank. It is best not to heave to, but to make short tacks till day light, making allowance for a probable current of 1 mile per hour to the N. W. A good look out is indispensable, and an officer should *now* go to the mast-head every 2 or 3 hours in the day, and to the fore-yard at night, to listen as well as to look; for in dark nights, breakers may often be heard before they can be seen.

Geo. site of Bird Islet.

In the day, you may pass about 9 or 10 leagues to the East of Cato's Bank and Wreck Reef; but with favorable weather, it may be desirable to get a sight of Bird Islet, situated at the eastern extremity of the latter in lat. 22° 11½′ S., lon. 155° 27′ E., in order to ascertain the accuracy of your chronometer, as its longitude is well determined.

Having passed Wreck Reef, there are no other *known* dangers near the route till you approach the lat. of DIANA'S BANK; but as undiscovered dangers may exist, it will be prudent to lie to, or rather to make short tacks in the night, during the rest of the passage to the strait. In very clear nights, however, and fine weather, there would not be great risk in closely following the Cumberland's track, (as marked on Captain Flinders' charts) carrying no more sail than the ship will bear conveniently when hauled to the wind; but if an unusual number of boobies and gannets be seen in the evening, this indicates the proximity of a bank and reef; and the direction taken by the birds, if they all go one way, as is usual in an evening, will nearly shew the bearing of danger.

Geo. site of Eastern Fields.

From Wreck Reef, steer to pass about a degree to the East of Diana's Bank; the next object of attention is the EASTERN FIELDS, or reefs which lie a degree out from those where Torres' Strait may be said to commence, and their N. E. end is in lat. 10° 2′ S., lon. 145° 45′ E. You may pass this, half a degree to the eastward; but if the strait is attempted without a chronometer, it will be prudent to steer for the coast of New Guinea in about lat. 10° S., lon. 147¼° E., which may be seen 12 or 15 leagues in clear weather; and from

hence, allow 18 miles daily for a W. N. W. current, which runs now to the westward through Torres' Strait.

The best parallel for passing the Eastern Fields, is in lat. 9° 45′ to 9° 50′ S., steering W. by S. by compass; and afterward, so long as there is day light, and no reefs seen, carry all sail for PANDORA'S ENTRANCE, which is the best opening yet known to the strait, being 11 or 12 miles wide between the reefs which form it, and its centre is in lat. 9° 54′ S., lon. 144° 42′ E. If the Eastern Fields be passed in the morning, you may possibly get through, and obtain a sight of Murray's Islands before dark, without seeing the breakers. But it is more probable, that the reefs will first be seen; and if then, the latitude is uncertain even to 5 miles, you must haul to the wind until an observation is obtained, for by the latitude alone, can the outer reefs be distinguished one from the other. Geo. site of Pandoras' Entrance.

With the reefs in sight, and the latitude known, steer for the Pandora's Entrance if you can fetch it; but if too much to the northward, pass round the North end of Portlock's Reef, which is in lat. 9° 26′ S., and haul up S. W. for MURRAY'S ISLANDS, situated in lat. 9° 53′ S., lon. 144° 3′ E., and visible 8 or 10 leagues from the deck in clear weather. It is best to approach these islands from N. E. by N., as reefs project South and eastward from them, and anchor the first night on the North side of the largest island, or otherwise under the reefs which lie to the N. E. of it; but if neither can be reached before dark, haul to the wind and make short tacks till day-light, in the space between these reefs and Portlock's Reef. Geo. site of Murray's Islands. Directions for sailing through Torres Strait.

Murray's Islands should not be passed, or quitted, if you have anchored there, later than 10 or 11 A. M., because the sun will get a-head and obscure the sight before another good anchorage can be secured. The reef that lies 5 miles to the North of the islands, should be kept about a mile on the starboard hand in passing, steering W. ½ S. by compass, with a boat a-head; for in this part there are many tide ripplings, scarcely to be distinguished from the reefs. Having passed the ripplings, haul a point more to southward, and after having run 8 or 10 miles from the time that the largest of Murray's Islands bore South, there will be very few reefs to the northward, and DARNLEY'S ISLAND will be seen. On the larboard hand, there will be a great mass of reefs, and these should be followed at the distance of 2 or 3 miles, steering mostly W. S. W., and gradually more southward as they are found to trend. Some small patches will be met with occasionally, but having the boat a head, and the commander, or a careful officer looking out aloft, they may easily be avoided.

The leading mark throughout this part, is the line of the Great South-Eastern Reefs; and the situation of the ship may be known at any time, by laying down bearings of Murray's and Darnley's Islands on Capt. Flinder's chart of Torres Strait; allowing 5° of East variation, if the ship's head be westward, and the compass on the binnacle.

Several low woody isles will appear in sight a-head, or on the starboard bow, and before reaching the end of the S. Eastern reefs, HALF-WAY ISLAND, the southernmost of them, will be seen to the S. W., which lies in lat. 10° 7′ S., lon. 143° 19′ E.; and here, you should anchor for the night. If, however, this island can be passed before 3 P. M., and the sun do not obscure the sight, you may push on S. Westward till an hour before sun-set, and anchor under the lee of any of those sand banks which lie near the route, the ground being better here, than in the eastern part of the strait. Geo. site of Half-way Island.

From Half-way Island, continue to follow the Investigator's track, steering S. W. to S. W. by W. by compass, as the small reefs and banks will admit, and there is no necessity in this part for a boat to be kept a-head. The flat top of Mount Adolphus, on 1 of the York Isles, in lat. 10° 37′ S., lon. 142° 40′ E., will be the first high land seen, and afterward Mount Ernest, which lies 7 or 8 leagues to the N. Westward; the cross bearings of these, will show your situation on the chart, until DOUBLE ISLE, in lat. 10° 27′ S. appears in sight, which makes in 2 small hummocks. Steer then for it, which pass on the North side, and haul S. Westward for Wednesday Island, which will be 3 leagues distant. Pass it also on the North side Geo. site of Mount Adolphus.

about 1 mile, and the same distance from Hammond's Island, which lies next to it: there will be an extensive reef on the starboard hand, but the least distance between it and the islands is above 2 miles; and a W. S. W. course by compass, will lead fair through the passage, in soundings from 9 to 6 fathoms.

Geo. site of Booby Isle.

Booby Isle, in lat. 10° 27′ S., lon. 141° 56′ E., will soon be seen a-head, appearing at first like a white sand bank, which may be passed in soundings of 5 to 7 fathoms, within 1 or 2 miles on either side, and it is the westernmost isle or danger of Torres Strait; under lee of this isle, you may anchor, and will probably get some turtle, if the boat be sent on shore. From hence, steer afterward by compass W. by S. 30 or 40 miles, to avoid a large reef about 7 leagues to the W. N. Westward of Booby Island, then toward the intended port, wherever you are bound, being now clear to the West of all dangers in Torres Strait.

If the approach of night, or other circumstances render it desirable to anchor, before you reach Booby Island, shelter will be found to the N. W. of Wednesday Island, or Hammond's Island, which are the northernmost of the Prince of Wales' Group, and situated within a league of each other in lat. 10° 0′ S. to 10° 5′ S., lon. 142° 12′ E. to 142° 20′ E.

Geo. site of Prince of Wales' Islands.

The route described above, and recommended by Capt. Flinders, is that usually followed; nevertheless, several vessels have lately got safe through Torres Strait, by pursuing a route much farther to the southward, as will appear by the following description.

Indefatigable's Route through Torres Strait.

INDEFATIGABLE'S ROUTE,* through TORRES STRAIT, lately pursued by the ship of this name, is perhaps not more dangerous than the foregoing, as the Indefatigable, drawing 18 feet water, got safely through it in little more than 2 days, with the Cochin, a small ship, and a brig, which entered the Barrier Reefs with her.

These 3 vessels left Port Jackson on the 13th of July, 1815, and knowing (by the Pandora's track) that the Barrier Reefs afforded no eligible entrance between lat. 9° 56′ S., at the Pandora's entrance and 11° 25′ S. where she was wrecked, they resolved to endeavour to find an entrance through the Barrier farther South, nearly opposite to Hardy's Islands. On the 3d of August, A. M., steering westward the Barrier Reefs were discovered, and an opening seen, which proved to be 4 or 5 miles wide; this was entered at noon, and by observation found to be in lat. 11° 50′ S., about lon. 144° 10′ E. by indifferent chronometer. The reef was dry on the North side of the entrance several miles, that on the South side was 10 or 12 feet above water, consisting apparently of sand and large masses of rock, with others under water. Steered about 6 leagues to the westward after entering the Barrier till 5 P. M. 4th of August, sounded and got no bottom, and finding we were in an open space surrounded by reefs, excepting a clear opening to the N. N. W. directly to leeward, made short tacks all night, keeping a boat to leeward. At day-light, we were within 2 cable's lengths of a reef, having no soundings with the hand-lead close among the breakers.

Geo. site of her passage through the Barrier Reefs,

At day-light, the ship in company was seen about 10 miles to the N. E., with 2 or 3 reefs between us, and an opening appearing to N. W., we steered for it, in hope that she would find a passage among the reefs and join us, which she did. After steering in different directions, making a course about N. N. W., at 9 A. M. passed to the westward between 2 reefs high above water, about 2 miles apart; steered N. W. and westward to round the South end of a sand bank, and at noon the observed lat. was 11° 25′ S., the sand bank then being the only danger in sight from the deck, and bearing to the S. E.

and her route through Torres Strait described.

August 5th. At 1 P. M. steered to the westward, to round the South side of extensive reefs seen to the N. W., and perceiving by the colour of the water we were in shoal soundings, immediately got 4 and 3¾ fathoms, shells and sand. At 2 P. M. steering N. W. and W. N. W. between extensive reefs to the North and East, and a long dry reef to the south-

* Communicated by Joseph Arnold, F. L. S., who was passenger in the Indefatigable, and delineated a chart of her passage through among the reefs, accompanied by an explicit description.

ward, no ground at 15 fathoms, wind S. S. E., sailing at the rate of 7 knots. At 4 P. M. steering N. W. between extensive reefs above water, saw 2 hills to the westward supposed to be on the main, having to the northward a point of land covered with trees, distant about 10 miles, which is probably an island. At 5 P. M. rounded the North point of the reef to the westward, and at 5½ P. M. anchored within a mile of its N. W. end in 15 fathoms stiff clay, which reef is extensive, with a bason of smooth water in its centre, and a hillock of sand on its North end, crowned with a few bushes. An island covered with trees bore from our anchorage about W. S. W., with reefs stretching to South and northward, and on the N. W. reef appeared a single tree; the main land was seen obscurely bearing from South to W. N. W., and there were openings between the reefs at S. by E. and North.

At 8 A. M. weighed with a strong breeze at S. E., steered northward, and at 10 passed on the West side of a small island covered with trees, having a reef projecting to the northward: the main land to the westward moderately elevated. At 11¼ A. M. entered between 2 extensive reefs, in a passage little more than a mile wide, steering through to the N. N. W. had soundings of only 4 and 5 fathoms, and soon saw Mount Adolphus a-head, which we thought at first to be Turtle Island, and a small woody island bore W. by N., distant about 3 miles.

At noon, observed lat. 10° 36′ S., being then through the passage, and abreast of Mount Adolphus, too far advanced to the northward, to proceed between Cape York and the York Islands, (which is probably the best passage) steered to round the latter. At 1½ P. M. August 6th, in passing on the North side of the northernmost York Island above 1 mile distant, struck, and grounded on a shoal in 13 feet water, where the ship lay till the tide rose and floated her off at 8 P. M. into deep water, then anchored with the eastern extremity of the northernmost York Island bearing E. ½ N., distant 3 miles, a sandy beach on ditto E. by S., westernmost extremity of ditto S. S. E., Mount Adolphus on the largest island S. E. ½ E., Cape York S. by E, Possession Island S. W. by S., a rock about 4 miles distant W. ½ S., Horned Hill W. ½ N., Double Island N. W., and Mount Ernest N. N. W., the tide setting strong to the eastward.

Grounded near York Islands.

We remained at anchor till the 7th, then weighed at day-light, and steered S. W. ½ S. for Endeavour's Strait with a boat a-head, the soundings from 5 to 10 fathoms. The ship and brig, had left us on the 6th, but after passing through Endeavour's Strait, we again fell in with them, in want of surgical aid, as the Captains of both vessels, and some of their people had been speared by the natives on the preceding evening, in attempting to land on Possession Island. They seemed to be very numerous, and had lighted large fires on the largest island of the Prince of Wales' Group, and on many parts of New Holland.

When through the strait, steered toward Booby Island, but grounded twice for a short time, in passing over the spot where 3 fathoms is marked in Capt. Flinder's chart; the brig kept more to the southward, and had not less than 6 fathoms water. At night we anchored under Booby Island, and procured some turtle.

Grounded between Endeavour's Strait and Booby Island.

With proper care, this SOUTHERN ROUTE of the Indefatigable, is *perhaps* the best yet known through Torres Strait for a ship at an ***easy draught*** of water, being shorter than the northern route, and equally safe, but much caution ought to be taken in a ship drawing 18 feet water or upward. To proceed by it, the passage through the Barrier Reefs opposite to Hardy's Islands, ought if possible to be entered early in the morning, by which a ship will probably get well to the westward into soundings and anchorage before night, and avoid the danger of keeping under sail among the reefs. A boat should be kept a-head, with proper signals to shew the depth of water throughout the passage, and a careful officer, with other trusty persons, ought to look out carefully from the mast-head, and an anchoring place sought before night.

Remarks, and brief directions for pursuing the Indefatigable's Route through Torres Strait.

The Indefatigable's anchoring place, is a good station to stop on the second night, and may be known by the 2 hills on the main, 2 small islands covered with wood, and the reef

with a single tree on it. Leaving this anchorage at day-light, the small bushy island and reef must be left to the right, and soon after Mount Adolphus will be seen. It is preferable to pass between it and Cape York, in the track of Capt. Cook: the course from York Islands to Endeavour's Strait is safe, with depths from 5 to 10 fathoms. If you pass through the narrow part of the strait when the tide runs strong to the eastward, borrow toward the island that forms the southern side, as the tide sets then strong toward the northernmost island. With the wind fair, you may reach Booby Island in the evening, passing to the southward of the 2 spits marked with 3 fathoms in Capt. Flinder's chart, on which the Indefatigable struck.

From the time the Indefatigable entered the passage of the Barrier Reefs in lat. 11° 50′ S. opposite to Hardy's Islands, until she finally cleared them in lat. 10° 37′ S., she was only about 24 hours under sail, excluding the first night, when she endeavoured to keep her station by making short tacks within the Barrier Reefs; and although she ran about 140 miles, on account of the various directions of the reefs, the distance in a straight line is probably not more than 110 miles. The wind kept brisk about S. E. during the whole of the passage through among the reefs, with smooth water, and there appeared to be a weak N. Westerly current.

Inner Route to Endeavour's Strait, pursued by the Cyclops,

INNER ROUTE, toward ENDEAVOUR'S STRAIT, was pursued by Capt. Cripps, in the brig Cyclops, bound from Port Jackson to Bengal in 1812. His vessel being crank, made him fearful of passing outside of the Barrier Reefs, least he should miss the proper entrance, and be unable to beat off from them: he therefore made the land at Buzzard's Bay, then followed Capt. Cook's track within the reefs, and passed through Endeavour's Strait. Throughout this track, the sea was always smooth, with moderate depths for anchoring at night, which every ship ought to do; and if a good look out be kept in the day, Capt. Cripps thinks, this passage may be followed in a small ship, or in 1 of moderate size, if not drawing much water.

and by the Kangaroo.

This Inner Route, was recently followed by Lieut. Jeffries, in H. M. brig, Kangaroo, which sailed from Port Jackson on the 19th of April, 1815, bound to Ceylon, with a detachment of troops. Having thick weather as Wreck Reef was approached, rendering it unpleasant to run for the narrow channels of the Barrier Reefs, the passage inside of the Great Barrier Reefs, was therefore pursued. On the 28th of April, she rounded Breaksea-Spit, at Sandy Point, Harvey's Bay, and filled up her water at Port Bowen, where she was detained several days by a gale of wind. From hence, the track of Capt. Cook was followed as nearly as possible, inside of Northumberland and Cumberland Islands, through Whitsunday Passage; and such parts as Capt. Cook had passed in the night, were at this time passed in the day: at Cape Sandwich, some fruit was obtained from the natives, who appeared friendly. Having on the 29th passed Cape Flattery and Endeavour River, (where Capt. Cook steered out from the coast) the Kangaroo continued by day, to sail along that unexplored part of the coast, anchoring at night under some convenient reef or shoal, which were numberless, but a clear passage was found from 3 to 5 miles off shore; and from 7 to 9 miles off, the continuation of the reef and sand banks appeared, which was first discovered at Cape Grafton. In passing along the coast between Cape Flattery and Cape Weymouth, a large group of islands were discovered, named Flinder's Group, by Lieut. Jeffries; also an extensive bay or gulf at least 30 miles in depth, which was called Princess Charlotte Bay, the neighbouring coast, presenting a fertile aspect, interspersed with trees. On the 1st of June, in lat. 13° 32′ S., lon. 143° 47′ E. by lunar observation, passed within 10 yards of a mushroom coral rock about 4 feet under water, but the rays of the sun prevented the red colour of the water over it from being seen till closely approached. About 2 miles to the westward of Bolt Head, the Kangaroo grounded on another coral shoal, which was not discerned, the soundings on this part of the coast varying from 5 to 20 fathoms. On the 6th

rounded Cape York, and found it to be an island, and not part of the main land as hitherto supposed; anchored here during the night, and passed through Endeavour's Strait on the 7th, carrying from 3 to 3½ fathoms water about ½ flood till within a few miles of Booby Island, where she anchored in the night, and arrived at Timor on the 19th. Here she remained till the 26th of June, and arrived on the 24th of July, in Colombo Road at Ceylon.

THE BEST ROUTE from PORT JACKSON toward HINDOOSTAN, when neither the southern passage, nor that by Torre's Strait is adopted, seems to be round New Guinea, then through the Pitt's Passage and Java Sea, or out through the Ombay Passage into the open sea, in time of war; which route, like the other, ought only to be followed when the S. E. monsoon prevails to the South of the equator. To sail from Port Jackson toward Hindoostan by the Pitt's Passage.

A ship intending to proceed by the route round New Guinea, may from Van Diemen's Land or Port Jackson, steer to the E. N. E. and N. E. until in about lon. 160° E., then to the northward, keeping nearly on that meridian with the S. E. trade. A good look out is necessary, in the vicinity of islands or dangers situated near the track, and as undiscovered dangers probably exist, a good look out ought never to be omitted.*

When lat. 23° S., is approached, be more particularly on your guard, for several dangerous reefs lie between lat. 23½° and 18° S., and probably other unknown dangers exist in their neighbourhood, in that part of the ocean formed betwixt New Caledonia and the opposite coast of New Holland.

LAUGHLAN'S ISLANDS, appear to be a new discovery made by Captain David Laughlan in the ship Mary, from Port Jackson bound to Bengal, with the ship Clarkson in company. The following description of them, extracted from the journal of the navigator named above, shews them to be situated nearly in the *direct route* of ships steering for St. George's Channel, formed between New Britain and New Ireland. Laughlan's Islands.

August 16th, 1812, at 2 P. M. saw from the deck a group of islands a-head, distant about 7 miles, hauled to the wind N. by E. in order to clear the reefs, which appeared to surround 6 or 7 islands extending E. S. E. and W. N. W. 3½ or 4 leagues, and bearing by compass from N. N. W. ¼ W. to N. W. by W. At 3¾ P. M. extremes of the land bore from West to S. W. ¼ W. distant 7 or 8 miles, appearing like 2 islands: saw several cocoa-nut trees on the western extremity, and a reef with high breakers appeared to encompass the islands. The south-east extremity of these islands is in lat. 9° 20′ S., lon. 153° 45′ E. by chronometer from Port Jackson, or in lon. 153° 40′ E. measured back from Cape St. George. Geo. site.

Having got into lat. 13° or 14° S., a N. Westerly course should be steered for the entrance of St. George's Channel, formed betwixt New Ireland and New Britain, taking care to give a birth to Laughlan's Islands, also to the western coast of Bougainville's Island, and the shoals that front it to a considerable distance. The westernmost of these coral shoals are in lat. 6° 11′ S., lon. 154° 22′ E., but others lie to the South, and also to the northward, contiguous to Winchelsea's, or Bouka Island. Bougainville's Island. Geo. site of Shoals.

CAPE ST. GEORGE, in lat. 4° 54′ S., lon. 152° 59′ E., is the southern promontory of New Ireland, and as the current often sets to North and westward when near the southern coast of New Britain, it is prudent for ships bound through St. George's Channel, to keep well to the eastward in steering for the Cape, and to round it pretty close. If a supply of Geo. site of Cape St. George.

* The route here described, to the eastward of Catos Reef, Wreck Reef, or other dangers, is commonly pursued; but Captain Bristow, is of opinion, that the best track from Port Jackson, is to keep within a moderate distance of the coast as far as Sandy Cape, and pass to the westward of those shoals, and from Sandy Cape to steer for Cape St. George, or for Cape Deliverance if bound through Dampier's Strait. He was only 13 days from Port Jackson to the coast of New Hanover, by the latter route.

wood and water is wanted, it may be got at Gower's Harbour, Carteret's Harbour, or at Port Hunter.

Gower's Harbour. GOWER'S HARBOUR, situated a little way within Cape St. George, is formed between the shore of New Ireland and Wallis Island, called Marteux by the French, having a small green island fronting the southern entrance. The depths are from 46 to 30 fathoms in this harbour or gut, which is about ½ a mile wide. There is also anchorage on the North side of the West point of Wallis Island, in 28 or 30 fathoms in Turtle Bay: but the 2 coves opposite to the North point of this island, are the most convenient places to moor, and procure water. The easternmost called English Cove, has a brook of fresh water that falls into it, and they lie close to each other.

Carteret's Harbour. CARTERET'S HARBOUR, situated about 2 leagues to the N. Westward of Wallis Island, is not easily discerned, unless a ship keep near the shore; it being formed in a concavity of the coast, and Cocoanut Island at the entrance being low, it is obscured by the adjoining high land of New Ireland.

Leigh's Island, is small, and lies near the South end of Cocoanut Island; betwixt the former and Booby Rock, fronting the southern mouth of the harbour, is the passage in, by the South channel. The North channel, is formed between the western point of the harbour and the N. W. end of Cocoanut Island, and both channels are narrow, although there is plenty of room inside: a ship may anchor in 25 or 30 fathoms soft mud, close under the North side of Cocoanut Island, and be well sheltered. Wood is got on this island, and very good water conveniently, on the coast of New Ireland, to the northward of the anchorage; but this harbour affords no other refreshments.

Geo. site. The anchorage is in lat. 4° 48′ S., lon. 152° 46′ E., variation 7° E. in 1780. The tide flows once in 24 hours, and rises about 6 feet.

Port Hunter. PORT HUNTER, in lat. 4° 7½′ S., is a small bay formed at the N. W. part of Duke of York's Island, where a ship may anchor in 20 or 25 fathoms soft ground, within 1½ cable's length of the shore; but farther in, the bottom is not good. Fresh water is got on the East side of the bay, where it issues out of the front of a high bank, very close to the sea; and it should be filled from ½ ebb to ½ flood, for the tide rises about 6 feet, and flows up to the place from whence the water issues.

A ship touching here for water, ought to cover the watering party by boats well armed, or she may moor near the shore for that purpose, because the island is well inhabited, and the natives are of warlike appearance.* Cocoanuts, sugar-cane, plantains, yams, and other fruits were seen on this island, also hogs and fowls. It is about 3 leagues in extent, moderately elevated, and the fair channel is to the eastward, betwixt it and the coast of New Ireland.

On the coast of New Britain, to the westward of Duke of York's Island, is situated the remarkable hills called Mother and Daughters, with a small flat volcano hill near them.

Having cleared St. George's Channel, steer a westerly course toward the North coast of New Guinea, leaving to the northward the Admiralty Islands, and the chain of small isles extending from thence to the westward.

Geo. site of the Admiralty Islands. ADMIRALTY ISLANDS, form a large group, extending from about lat. 1° 50′ S. to 3° 10′ S., lon. 146° 0′ E. to about 148° 6′ E. The Friendship, bound from Port Jackson to Bengal

* The vessel in which Captain Hunter proceeded from Port Jackson to Batavia, touched here for water, having missed Carteret's Harbour. The natives were hostile, and made an attack on the watering party, who fired on them; they were kept at a distance afterward, by firing a few shots into the wood at times.

in 1800, with another ship in company, passed between the large southern island and others to the northward, and had 20 fathoms water in the passage. The Great Island is high, situated in the middle of the group, and most of the small isles which encircle it, are fronted by shoals.

There is anchorage opposite to a village, on the West side of the southern island; and about 12 leagues to the westward of this island, and South from the mountain on the Great Admiralty Island, a dangerous reef is situated in lat. 2° 42′ S.

Sydney Shoal.

SYDNEY SHOAL, was discovered by Captain Austin Forrest, bound from Port Jackson toward Bengal in the ship Sydney. At 1 A. M. on the 20th of May, 1806, she struck upon it, and soon bilged, it being then covered at high water, but some points of the rocks appeared above the surface at low water, and there were no soundings close to the shoal. The boats steered from it N. by E. ½ E. 58 miles, and the Admiralty Islands were then seen bearing N. N. E. distant 3 or 4 leagues, by which, and other observations, this dangerous shoal was found to be situated in lat. 3° 20′ S., lon. 146° 50′ E.

Geo. site.

If a ship be carried to the westward of the South entrance of St. George's Channel by the current, she might pass round to the southward of New Britain, and proceed through the strait formed close to its western extremity, generally called Dampier's Passage or Strait; but as this track is little frequented, a good look out is necessary, as there may be dangers not yet discovered,* in the approach to this strait from the southward.

Directions from New Britain to the Pitt's Passage, in the S. E. monsoon;

Whether the route by St. George's Channel, or that through Dampier's Strait be followed, you ought to sail within a moderate distance of the North coast of New Guinea, in order to avoid the easterly currents and light variable N. W. winds, which may be expected North of the equator. These N. Easterly currents, are liable to drift ships a great way off into the ocean, rendering it necessary after getting into lon. 134° E., to keep near the coast of New Guinea when bound into the Pitt's Passage in the S. E. monsoon, or from March to to September.

After passing betwixt Point Pigot and the N. W. end of New Guinea, through Dampier's Strait, into the Pitt's Passage, conform to the directions given in 1 of the former sections, for pursuing the route from China outside of the Philippine Islands through the Pitt's Passage.

or by the northern track through the Sooloo Sea, in the N. E. monsoon.

When the N. W. monsoon prevails to the southward, and the N. E. monsoon to the northward of the equator, a ship bound to Hindoostan ought not to steer along the coast of New Guinea to the westward, as recommended above; but in November, December, and January, she ought to proceed to the northward until in about lat. 5° N., where N. E. winds may be expected to run with to the westward. The route to the southward of Mindanao, through Baseelan Strait, and the Sooloo Sea, round the North ends of Banguey and Balambangan into the China Sea, then through Malacca Strait, will in general, be more speedy than any other, during the N. E. monsoon. Directions will be found for this route, near the end of that section where the Molucca and Banda Islands are described; instructions being there given, for sailing from Amboina toward Hindoostan.

Eastern routes from Port Jackson, toward China or Hindoostan.

DEPARTING from PORT JACKSON or VAN DIEMEN'S LAND, ships bound to China or to Hindoostan when the N. E. monsoon is prevailing in North latitude, will generally have steadier winds, by pursuing a route more easterly than that described above, through St. George's Channel. There are 2 routes much frequented, which seem to be equally safe; 1 of these is to the westward of New Caledonia, the New Hebrides, and

* The ships in search of La Perouse, went through this strait in June, 1793. Captain Bristow, employed in the southern fishery, passed also through it about 8 years ago: he cruized near a month for whales, in May, off the Admiralty Islands and New Hanover; and although plenty of whales were seen, the boat could seldom be lowered down, on account of a continuance of blowing weather.

Santa Cruz or Egmont Island, leaving to the westward the great chain called Solomon Islands. The other route is to the eastward of New Caledonia, and the New Hebrides, leaving the Friendly Islands to the eastward, the westernmost group of which is called Feegee Islands.

To proceed by the ronte westward of New Caledonia.

To proceed by the westernmost of these routes, a ship ought to steer to the E. N. Eastward after leaving Port Jackson, to benefit by steady winds well out from the coast; and having got into about lon. 160° E., a northerly course may be steered, taking care to give a proper birth to the reefs which stretch a great way out from the N. W. end of New Caledonia.

As the wind blows sometimes from S, S.W. or S. W., contiguous to the western coast of New Caledonia, a ship can have no occasion to approach near to it, except she be in want of fresh water; which necessary article, may in a *case of necessity*, be procured at Port St. Vincent.

If a ship intend to go into that port, she must steer to fall in with the Great Reef, well to the southward, and then run along the edge of it, to the entrance of the port.

Geo. site of its southern extremity; contignous reef, and Isle of Pines.

NEW CALEDONIA, the southern extremity in lat. 22° 30′ S., lon. 166° 50′ E., is low land, not visible from the southern part of the Great Reef that surrounds it; for the southernmost extreme of the reef, is in lat. 23° S., lon. 166° 51′ E.; and the isle of Pines, lies to the eastward in lat. 22° 42′ S., lon. 167° 34′ E.

Geo. site of Port St. Vincent.

PORT ST. VINCENT, situated on the S. W. side of New Caledonia, in lat. 22° 0′ S., lon. 165° 55¼′ E., by mean of 25 sets of lunar observations, taken by Captain Kent in H. M. S. Buffalo, when he discovered it in 1803; and of which, he gives the following description.

This beautiful and extensive harbour, is formed by islands, many of them of considerable size, and are situated about 4 miles within the coral reef that extends along the whole S. W. coast of New Caledonia, excepting where it has a few breaks. It fronts the shore at the distance of from 4 to 8 miles, but stretches much farther from the North and South extremities of the land, which in those parts, is not visible when close to the reef. This great reef consists of a steep wall to seaward, level with the water's edge, having no soundings with 150 fathoms line, within 2 ship's lengths of it in most places.

The passage through which a ship must enter between the S. E. and N. W. points of the reef, in going into Port St. Vincent, is ¾ of a mile wide, having 51 fathoms in the centre; and the passage between the S. E. and N. W. Heads of the Port, on Governor King's and Colonel Paterson's Islands, is ¼ of a mile wide, with 19 fathoms water in the centre.

Directions.

From the direction of the land, and being within the southern tropic, the general wind must be at S. E., which is upon the beam, sailing *in* and *out* of this harbour; however, should the wind incline more easterly off the land, there can be no danger going in, for by passing within a cable's length of the S. E. point of the reef, and getting within it, you may anchor in 10 or 12 fathoms muddy bottom, well sheltered, with the water perfectly smooth; indeed, from the reef, to the 2 islands forming the entrance of the harbour, a distance of near 4 miles, you are as well sheltered as at Spithead. Within the 2 points of the reef, the channel widens to S. Eastward between the reef and Governor King's Island, having plenty of room to work in the largest ship as far as the heads of the harbour, if the wind do not over-blow.

Within the heads of the harbour, you may anchor in from 10 fathoms to any decreasing depth, secure from all winds and weather. The tide rises between 5 and 6 feet, high water at 8¼ hours on full and change of the moon. Variation, 11° E.

In the passage between Robbin's and Governor King's Islands, on the South side of the Middle Ground, there is plenty of water for any ship; and S. E. of this passage, there are a number of islands, forming perhaps many harbours equal to Port St. Vincent. Between

Colonel Paterson's and Round Island, there is also a passage to the N. W., and a few islands in that direction, but this passage seems not to have depth sufficient for a large ship. It is to be observed, that all the islands mentioned, are within the coral reef which extends along the S. W. side of New Caledonia; and there is probably no safe entrance through it, except that leading to Port St. Vincent..

The water procured on Robbin's Island, was not very good, but there *probably* is plenty in other places, the circumjacent land being generally very high; and by the chasms formed in some parts of it, torrents of rain must fall at some seasons of the year. The trees about the harbour are small, but in the valleys between the mountains, they appeared large, and the canoes are made out of large trees.

The natives often visited the Buffalo's people, bringing with them, spears, clubs, fishing-nets, fish, yams, and sugar canes, which they cultivate. The harbour abounds with fish, and on the reefs and shores, great quantities of shell-fish were found. The islands are high and rocky, but covered in many parts with fine grass; and on some of them, many human sculls and bones were seen.

NEW CALEDONIA, is seldom more than 8 or 10 leagues in breadth, but the chain of mountains which forms the interior, extends N. W. and S. E. about 80 leagues. The French ships in search of Monsieur Perouse, made the N.W. extremity of this large island in lat. 19° 58′ S., lon. 163° 30′ E. of Greenwich, or rather the extremity of a chain of small islands projecting from it; but there are other detached small isles and reefs, farther to the northward. One of these reefs is in about lat. 19° S., lon. 162° 52′ E.; and Moulin's Island in lat. 18° 31′ S., lon. 162° 52′ E., is small, low, and covered with trees, having a reef stretching from it to the westward. Another low woody island in lat. 18° 3′ S., lon. 162° 51′ E., has a reef extending 3 leagues North from it, which is the northernmost of the *known* reefs, in the vicinity of the northern extremity of New Caledonia. Queen Charlotte's Foreland, the S. E. part of New Caledonia, is in lat. 22° 15′ S., lon. 167° 13′ E.; and Botany Isle is in lat. 22° 27′ S, lon. 167° 17′ E. Loyalty Islands, form a large range to the eastward of New Caledonia, having a safe channel between them and the East coast.

Geo. site of the N. W. extremity of New Caledonia, and adjoining dangers.

Geo. site of the S.E. part.

A ship from Port Jackson, having passed to the westward of New Caledonia, and of the dangers last mentioned, may steer to the N. N. Eastward until in about lon 164° E., then to the northward on this meridian, which will carry her in the fair channel betwixt Solomon Islands to the westward, and Santa Cruz Islands to the eastward. Cape Boscawen, the N. W. extreme of the island Santa Cruz, is often placed in lat. 10° 55′ S., lon. 165° 40′ E., but Captain Hogan, made it 10 leagues more to the eastward.

To sail from the N. Western part of New Caledonia to the northward.

Geo. site of Cape Boscawen.

ARSACIDES, or S. Easternmost of the Solomon Islands, called sometimes San Christoval, has near its eastern extremity the 2 small islands of Deliverance, situated in lat. 10° 51′ S., lon. 162° 27′ E. In case of falling to the westward, there are several straits among these islands, through which ships may pass. Indispensible Strait, seems to be a wide and safe passage, the South entrance of which is in lat. 10° 15′ S., lon. 161° 15′ E. Pitt's Strait, situated about 3° farther to the N. W., is rather intricate at the North part; being formed in that part, among a group of small islands, which occupies the space between the large island Santa Isabel, and another to the westward. Bougainville's Strait, is the next to the westward in lat. 7° S., lon. 156° E.; and there is a wide strait in lon. 153° 30′ E., formed betwixt the S. E. part of New Island to the westward, and Winchelsea's Island and other groups to the eastward.

Geo. site of Deliverance Islands.

Geo. site of Indispensible Strait.

Geo. site of Bougainville's Strait.

Having rounded the easternmost of the Solomon Islands, the best track for a ship bound into the Pitt's Passage, or toward the South end of Mindanao is, to pass to the northward of all the large Solomon Islands at a moderate distance, then steer to the westward for Win-

To sail from Solomon Islands toward the Pitt's Passage, or

chelsea's Island, and round its North end. From hence, she may steer West for Cape St. George, and proceed through St. George's Channel; afterward, she ought to keep within a moderate distance of the North coast of New Guinea to Point Pigot, and pass into the Pitt's Passage by Dampier's Strait, during the S. E. monsoon, as directed in the preceding part of this section. Or if bound toward the South end of Mindanao and Baseelan Strait, when the N. E. monsoon is prevailing in North latitude, after having got into lon. 140° to 136° E., and finding the winds become light, she should stand across the equator into lat. 5° or 6° N., where she will meet with the skirt of the N. E. monsoon to carry her to the westward, as stated already in the preceding part of this section.

toward the South end of Mindanao.

Ships bound to China in the early part of the N. E. monsoon, after passing to the eastward of the Solomon Islands, may steer about N. by W. and N. N. W., in order to pass through among the Carolina Islands between lon. 155° and 149° E., where large channels are formed by the different islands; but in this track a good look out is indispensible, for many undiscovered isles and reefs *probably* exist. More particularly, caution is requisite in crossing the Carolinas, because the islands which form this chain are very little known; and although they are probably not *so numerous* as hitherto supposed, their real situations may be very different from that assigned to them in the charts.

or from Solomon Islands toward China, early,

When clear to the northward of the Carolina Islands, a course may be steered to pass near the South end of Guam, the southernmost of the Marian Islands, or more to the northward, through some of the channels at discretion, either on the South side of Tinian, or to the northward of Saypan. From hence, a direct course should be pursued, to pass into the China sea, by 1 of the Bashee channels.

and late in the season.

Ships bound to China late in the season, having passed the easternmost of the Solomon Islands after January, when the violence of the N. E. monsoon begins to abate, may steer from thence a direct course to the N. W., in order to pass between the island Yap and the Matelotas; or betwixt the latter and the Pellew Islands, as time and circumstances require. From hence, a course should be followed to give a proper birth to the N. E. end of Luconia; and the most convenient channel among the islands between it and the South end of Formosa, may be adopted to pass through into the China Sea, according to the prevailing wind.

To sail from Port Jackson toward China by the Outer Passage.

OUTER PASSAGE, from PORT JACKSON, or VAN DIEMEN'S LAND,* to China, is more circuitous than the routes described above, but it seems to have fewer dangers, with steadier winds than experienced to the westward of New Caledonia and the New Hebrides; it may, therefore, be adopted by ships which come through Bass' Strait, or round Van Diemen's Land, early in the season; for as westerly currents are generally experienced in crossing the S. E. trade, which sometimes hangs far to the eastward, it is advisable in a ship that sails indifferently, to give a wide birth to all the large islands, by keeping well to the eastward of them.

To proceed by this route, a ship ought to steer to make NORFOLK ISLAND, or to pass near it to the eastward, there being no danger above a mile from the shore. Mount Pitt, the highest part of this island, is in lat. 29° 2′ S., lon. 168° 2′ E. Variation 11° E. in 1802. From Norfolk Island, a course may be steered to pass near MATTHEW'S ISLAND

* In addition to the information contained in the foregoing pages, relative to Port Jackson and Van Diemen's Land, it is satisfactory to observe, that in July, 1816, the foundation stone of a square Pyramidal Tower, was laid on the South Head of Port Jackson, and called "*Macquarie Tower*," which is to answer as a Signal Post, and Light Tower, and it will be discernible a great distance from seaward, as the light is to be elevated 65 feet above the Head; the wings of the building, are to be appropriated as a guard house for a small military detachment.

It is also said, that Mr. Kelly, in the Henrietta Packet, has discovered a very good harbour on the East side of the South Cape of Van Diemen's Land, its southern extremity called South Head, being in lat. 43o 30′ S. It is stated to be 5 miles wide at the entrance, extending about 20 miles inland, and capable of affording safe shelter to vessels in stormy weather.

or ROCK,* in lat. 22° 24′ S., about lon. 172° 15′ E., which may be seen 8 or 9 leagues. By keeping thus far to the eastward, the islands adjacent to New Caledonia, and the New Hebrides, will all be left well to the westward, and the Feejee Islands to the eastward; but as some unknown isles or dangers may probably exist, a good look out is indispensible in these seas, particularly during the night. Geo. site of Norfolk Island. Geo. site of Matthew's Rock.

Having passed the parallel of Matthew's Rock, steer N. by W. by compass, to give a birth to the range of NEW HEBRIDES, by keeping in lon. 172° to 171° E., as a westerly current is often experienced near those islands. If a ship make Erronan, the easternmost island, situated in lat. 19° 39′ S., about lon. 170° 15′ E., and be unable to weather it, she may pass through the channel betwixt it and Tanna, which is wide and safe. From hence, a North course is proper till in lat. 13° S., to avoid Aurora Island and others which form the northernmost of the New Hebrides, said to extend considerably to the northward of the situation assigned to them in the charts. If none of the New Hebrides have been seen, steer to get a sight of MITRE ISLAND in lat. 11° 49′ S., which is high land, and placed in lon. 170° E. in the charts, but the Neptune made it in lon. 170° 42′ E. by chronometers, in 1804. Cherry Island lies W. N. W. 9 or 10 leagues from Mitre Island, and Barwell Island lies in a W. S. W. direction from it, 18 or 20 leagues distance. Cherry Island has a rock off its South end, which makes a near approach from the southward dangerous in the night. Geo. site of Erronan. Geo. site of Mitre Island.

Ships in want of water and refreshments, may keep farther to the eastward, and touch at the Feejee, or Friendly Islands, in order to obtain the necessary supplies. Some refreshments may also be procured at the New Hebrides, but great caution is requisite in landing on any of those islands, most of them being inhabited by an intrepid race of men, who are easily provoked to hostility; and they have been recently successful in cutting off several vessels.† Caution requisite in touching at any of the islands.

After passing Mitre Island, a northerly course should be pursued, in order to cross the equator in lon. 168° to 160° E., and as strong westerly currents often prevail from its vicinity, until several degrees to the northward, a ship may steer so as to pass through among the Carolinas in about lon. 163° E.: but if the equator has been crossed in lon. 160° to 162° E., the best track to pass through among those islands, seems to be in lon. 156° to 155° E., which space is thought to be *nearly* destitute of islands. To sail to the northward across the equator, through among the Carolina Islands, and

When clear to the northward of the Carolina Islands, a westerly course should be followed to pass through the most convenient channel among the Marian or Ladrone Islands, or to the southward of Guam, as directed above. And from thence, a direct course should be pursued, for some of the channels formed between Botel Tobago Xima and the islands to the northward of Luconia. from thence westward to the Marian Islands, and to the Bashee Islands.

THE FOLLOWING ISLANDS or DANGERS, it may be necessary to mention, because they lie in, or near to some of the routes in sailing from Port Jackson to China; and are either incorrectly placed in the charts, or omitted altogether. WALPOLE'S ISLAND, in lat. 22° 39′ S., lon. 169° 16′ E., discovered by Captain Butler, in the ship of that name, in 1794, has since been seen by many ships; Durand's Reef, near it, is in lat. 22° 6′ S., lon. 169° 2′ E. Volcano Island, situated in lat. 10° 39′ S., lon. 166° 12′ E., by Geo. site of several islands, or dangers.

* This is called Hunter Island, by Captain Fearn, who places it in lon. 171° 50′ E., and he discovered a high rock to the westward, in lat. 22° 21′ S., distant 14 leagues from the former; this he considered to be Matthew's Rock, which has near it to the northward, a flat rock that may be seen about 5 leagues.

† Several ships, returning in ballast, from Port Jackson toward India, have proceeded to New Zealand with the view of cutting down pine spars, for masts, &c.; but great labour and difficulty occurred in getting them from the forests to the water, exclusive of the risk of the people being cut off by the natives, who have killed the crews of boats whilst employed on shore. These ferocious people, have also assaulted several ships, and massacred their crews.

observations in the Cornwallis and Perseus, seems to be placed considerably too far to the N. Westward in the charts; and the adjacent large island Santa Cruz, appears to partake of the same error. HUNTER'S ISLANDS, by the observations of Captain Mortlock, who saw them in the Young William, in 1795, are situated in lat. 4° 48′ S., lon. 157° 0′ E. A high island, situated in lat. 0° 48′ S., lon. 170° 49′ E., was seen by the Ocean, in 1804. Pleasant Island, in lat. 0° 20′ S., lon. 167° 10′ E. by Capt. Fearn's observations, who passed near it in 1798, is of considerable size, well inhabited by a stout race of men, who have canoes of moderate dimensions; it may be seen 6 leagues, and reefs project from its North and South extremes. Brown's Range and Parry's Island, consist of a chain of reefs and low isles, which from Parry's Island in lat. 11° 21′ N., about lon. 162° 52′ E., extend about 12 leagues in a W. N. W. and N. W. direction to West Danger Island, or westernmost isle of the chain, from whence the reef stretches 3 or 4 leagues to the northward, without having any passage through the whole of this extent. The Ocean saw 3 of the Carolina Islands, and by lunar observations made Margaret's Island in lat. 8° 52′ N., lon. 166° 15′ E., Lydea's Island in lat. 9° 4′ N., lon. 165° 58′ E., and Catherine's Island in lat. 9° 14′ N., lon. 166° 2′ E. The ship Providence, in 1811, made ARRECIFES ISLAND, in lat. 9° 36′ N., lon. 161° 8′ E. by chronometer. CORNWALLIS ISLES, in lat. 16° 53′ N., lon. 169° 31′ E., are 2 small isles, surrounded by a reef, discovered by H. M. S. Cornwallis, on the 14th of December, 1807. GASPAR RICO, in lat. 14° 30½′ N., lon. 168° 42′ E. by chronometers and lunar observations, are a group of 5 islands with extensive reefs, seen in 1796, and in 1807 by the Cornwallis.

Geo. site of Mac Askill's Islands.

MAC ASKILL'S ISLANDS, discovered on the 29th of October, 1809, by Capt. Mac Askill, of the ship Lady Barlow, on his passage from Port Jackson toward China, appeared to be 2 islands covered with trees, extending about 3 leagues S. E. and N. W., and seemed to be bold to approach on the West side. By good observations, their centre was found to be in lat. 6° 12′ N., lon. 160° 53′ E.

The Lady Barlow, passed over the situation assigned to the large islands Hogolew and Torris in most of the charts, and also over the assigned places of others of the Carolinas, without discerning any signs of land; from which, compared with the observations of other ships, it appears that the islands which form the Carolina Archipelago, are not so numerous as represented, and that in general, their geographical situations are not well determined.*

# *PASSAGE from INDIA toward EUROPE.*

## 1st. INSTRUCTIONS FOR SAILING FROM INDIA, ROUND THE CAPE OF GOOD HOPE, TO ST. HELENA.

To sail from the Eastern Straits, through the S. E. trade.

SHIPS from CHINA, which pass out into the Indian Ocean by any of the straits East of Java, or by the Strait of Sunda, ought to endeavour to get speedily into the strength of

* The following islands or dangers, lately discovered by Russian ships, lie nearer to the American continent, and are not in the way of ships proceeding from Port Jackson toward China; viz. Suwarrow's Islands, discovered by the Russian ship of this name, on the 27th of September, 1814, are 4 uninhabited islands, extending from lat. 13° 6′ to 13° 15′ S., lon. 163° 23′ to 163° 31′ W. Lisiansky's Island, in lat. 26° 2¾′ N., lon. 173° 42¼′ W. is low, about a mile long, destitute of fresh water, with a coral reef extending around to the distance of 2 miles. Krusenstern's Rock, in lat. 22° 15′ N., lon. 175° 37′ W. appeared to be a rock under water, as breakers were seen from the ship Neva, in 1804, and shoal water seemed to extend 2 miles from the breakers, which were only seen in 1 place, but the weather did not permit Capt. Lisiansky to examine this supposed danger.

the S. E. trade, in order to run to the westward with steady winds. In lat. 14° or 15° S., the trade wind will in general be experienced brisk and steady, increasing in strength as you get to S. Westward, or until in lat. 18° or 20° S.: here, it often blows with more force than in a lower latitude, but in March and April, the trade wind is liable to obstructions, and sometimes fails about the Southern Tropic in these months.

As this is the season when the Company's ships frequently pass through the S. E. trade, in their return toward the Cape of Good Hope, it becomes a duty, to warn those in charge of so many lives and valuable property, to be always prepared for a tempest, which is liable to happen within the limits of this trade.

Storms happen in the trade limits.

In Volume First of this work, it has been observed, that in the neighbourhood of the Islands Mauritius and Bourbon, storms may happen from November to May, but hurricanes are more liable to be experienced in March or April. These hurricanes blow with irresistible fury, near the Islands Roderigue, Mauritius, and Bourbon; generally most severe at the latter, and between it and the coast of Madagascar. Experience has shewn, that these hurricanes sometimes extend from the Southern Tropic, to lat. 9° or 10° S., and from the coast of Madagascar to about lon. 90° E.; but they seldom reach so far to the North and eastward, for their fury is generally confined between lat. 15° and 24° S., and within 5° or 6° of the islands mentioned above. Nevertheless, storms have been experienced at times far eastward, to the South of Java, and Sandalwood Island, when the westerly monsoon blows in those seas. On the 8th of January, 1812, the Abercromby, a new ship of 1200 tons, belonging to Bombay, when to the southward of Sandalwood Island, in lat. 14° S., lon. 115° E., was dismasted and nearly foundered, in a tempest which came on at northward, then veered to East, S. E., and South, and suddenly round to N. W.

A proportional abatement of the violence of these hurricanes, is, however, usually found, according as the distance is increased eastward of the Islands Roderigue, Mauritius, and Bourbon; for ships near these islands have frequently suffered by tempests, when others farther East at the same time, experienced no stormy weather. It is, therefore, advisable, for ships homeward bound, to keep well to the eastward in crossing the S. E. trade, and to round the islands at a great distance, when it can be done with propriety; more particularly, late in February, March, and April, when hurricanes are very liable to happen.

These hurricanes generally commence at northward, and after blowing violently sometime, they shift in an instant to the opposite quarter, and blow with equal fury, producing a very high and turbulent sea. Navigators, should therefore, be prepared to encounter stormy weather, when crossing the S. E. trade. The gun-deck ports, hawse-holes, &c. ought to be strongly barricaded before night, when there is the least appearance of a change of weather, and if the wind veer to northward and threaten to blow, a ship ought to be brought speedily under low snug sail; for there would be great danger of foundering, were she to be taken aback by 1 of those sudden gusts, with square sails set, particularly if any of her gun-deck ports should burst open.*

To return from Bengal or Malacca Strait, through the S. E. trade,

SHIPS from MALACCA STRAIT or BENGAL, bound to the Cape of Good Hope, may cross the equator in about lon. 87° to 90° E.; for those which come out of Malacca Strait, ought to steer a considerable distance to the W. S. W. before they haul to the southward, in order to avoid baffling light winds which generally prevail near the islands that front the West coast of Sumatra. If light winds are experienced about the equator, every effort should be made to reach the S. E. trade, by standing on the tack that will give most southing; and having got the steady trade wind, a course ought to be pursued to pass well to the eastward of Roderigue, as mentioned above, according to the season of the year.

* The unfortunate loss of H. M. ships Blenheim and Java, and 7 of the Company's ships in the short period of 2 years, are fatal proofs of the caution required in this part of the Indian Ocean.

also from Madras, Ceylon, and the Malabar coast.

SHIPS from MADRAS, and CEYLON, and those from the Malabar Coast, which do not adopt the western route by the Mozambique Channel, generally proceed by the eastern route, or outer passage. But the Island Ceylon, from whence these ships often take a departure, being considerably to leeward in the N. E. monsoon, they are consequently unable to cross the equator so far to the eastward as ships from Bengal, and are sometimes carried near Roderigue by the S. E. trade. Those from the Malabar coast, should steer for the S. W. part of Ceylon, and along that island to Dundre Head; from hence they should stand off to the S. Eastward with the N. E. monsoon, keeping a little from the wind, to make good way through the water; and they ought to cross the equator to the East of lon. 84° or 85° E., if practicable, in order to give a proper birth to Roderigue and the adjacent islands.

From April to November, when a storm seldom happens, these islands may be rounded at any convenient distance from 30 to 50 leagues; but in the other season, it seems prudent when practicable, to pass them at a greater distance, about 70, 80, or 85 leagues.

To sail from the S. E. trade, to the coast of Africa about Algoa Bay.

From whatever part of India ships have come, after getting to the southward of the Islands Mauritius and Bourbon, a course should be steered to give a birth of 30 or 25 leagues at least, to the South end of Madagascar; but it seems advisable to pass it at a greater distance than 25 leagues, if the weather is any way unsettled.

Having passed the southern part of Madagascar in about lat. 27° S., a *true* W. S. Westerly course, or about West and W. ¼ N. by compass, will carry a ship direct toward the land about Algoa Bay. It is prudent to approach the coast hereabout, to prevent being driven off to the southward, out of the stream of the current: and when the winds are contrary, it is advisable to get near the land about Natal, or between it and Algoa Bay, without loss of time, in order to benefit by the strong S. Westerly current that generally sets along the coast to Cape Aguilhas; but in passing Cape Padron and Bird Islands in the night, it is prudent to keep at least 7 or 8 leagues off the coast, to give a birth to the Doddington Rock.

To return from Bombay by the Middle Passage.

SHIPS bound from BOMBAY or the MALABAR COAST to Europe, in *former times*, have often adopted the MIDDLE PASSAGE, formed by the Chagos Archipelago to the eastward, and the Seychelle Islands and those of the Madagascar Archipelago to the westward. It has been stated in Volume First, that the London proceeded by this route in 1796, but as December and January appear to be the only 2 months favorable for it, when the N. W. monsoon generally prevails from the equator to the Madagascar Archipelago, and as a ship in these months may be liable to encounter a storm near the islands or shoals, the *Outer Passage*, ought always to be preferred, where there is plenty of sea-room, and less risk from stormy weather.

To return from the Red Sea, the Gulf of Persia, or from Bombay, by the Mozambique Channel.

SHIPS bound from the RED SEA, or GULF OF PERSIA, toward the Cape of Good Hope in the northerly monsoon, should proceed through the INNER PASSAGE or Mozambique Channel. Ships from Bombay and the northern parts of the Malabar coast, may also adopt this passage if they depart in the early part of the monsoon, in November or December, when northerly winds may be expected to carry them well into, or nearly through the Mozambique Channel. This route ought not, however, to be chosen late in the season, although it is more direct from Bombay than any other, because southerly winds prevail greatly in the Mozambique Channel after February; and even in this month, southerly winds are often experienced there. A strong current which generally sets along the coast of Africa to the southward, has enabled some ships to work through this channel in March and April, but it ought not to be attempted so late in the season, for great delay and uncertainty will be occasioned thereby; and as storms are sometimes experienced about the southern part of the Mozambique Channel, even in January and February, many navigators give the preference to the outer passage, eastward of Roderigue and all the other islands situated in the western part of the Indian Ocean, for which the preceding directions are applicable.

A ship departing from Bombay in November or December, intending to proceed by the Inner Passage, should steer to fall in with the Island Comoro, giving a proper birth to the Seychelle Islands, and to those that form the N. Western part of the Madagascar Archipelago. She may pass to the westward of Comoro, or through any of the channels between the Comoro Islands, as circumstances require. From hence, a direct course through the middle of the Mozambique Channel may be adopted, with a steady northerly wind; but when it is light, or southerly, she ought to keep within a reasonable distance of the African coast, where a strong current will be found setting to the southward in her favor: and it may be prudent to pass to the westward of John de Nova, the Europa Rocks, and Bassas de India, whether the wind be from northward or southward. The current generally runs strong round Cape Corrientes, and to benefit by it to the full extent, it is advisable to pass within sight of this cape, if the weather be favorable. Afterward, a moderate distance of 4 to 8 or 10 leagues may be preserved from the coast of Natal, unless the wind begin to blow from the S. E. with a rising sea; in this case, it will be proper to haul off to a greater distance from the land.

with sailing directions for that channel,

Whether the route through the Mozambique Channel, or any of those to the eastward of Madagascar have been adopted, it is advisable to approach within a moderate distance, the projecting part of the coast about Algoa Bay, if it has not previously been seen, farther to the northward; and afterward, it will be proper to keep near, or upon the edge of the bank of soundings, to benefit by the current.

and from thence along the bank of Cape Aguilhas.

But if a ship make the coast 12 or 14 leagues to the eastward of Cape Recife, in hazy weather, or be working to the westward in the night, great caution will be necessary to give a proper birth to the Doddington Rock, which has deep water near it, and lies 6 or 7 miles outside of the Bird Islands, or about 4 leagues distant from the nearest land, and about 5 leagues to the S. Westward of Cape Padron.

A description of the bank of Aguilhas, the prevailing currents, also of winds and weather in its vicinity, will be found in Volume First of this work; but brief directions, may here be useful, for ships proceeding to the westward.

In February, March, and the early part of April, when S. E. winds prevail, the best track to preserve the strength of the current after getting near the land about Algoa Bay, is to keep close along the outer edge of soundings until in about lon. 24° or 23½° E. Here, the direction of the stream begins to change from W. S. W. to S. W., and soon after to S. S. W. ½ W., for which a proper allowance should be made, by steering more toward the land, and keeping in deep soundings upon the edge of the bank.

In the winter months, when N. W. and westerly gales are frequent, it is advisable to keep well in with the coast, which partly shelters ships from the violence of these gales; for although the westerly current is strongest at the outer verge of the bank, ships which keep far out are liable to encounter very high seas, and be driven off a great way to the southward by N. W. or northerly gales. From this cause, several ships have been greatly retarded in regaining their position *upon* or *near* the verge of the bank, whilst others by keeping well in with the coast, had smooth water at the same time, and got round the Cape 5 or 6 days sooner than the former, who parted from them off Algoa Bay.

At all times of the year, when the winds incline to blow strong between N. E. and West, it is advisable to borrow upon the bank, toward the coast, or at least to guard against being driven far to the southward, where a contrary or eddy current often sets to the eastward. It is not thought dangerous to approach the coast of Africa, because the wind is seldom or ever known to blow with great violence directly on the shore, so that a ship may always clear it on 1 tack or the other. The coast is steep in most places, with soundings of 30 or 40 fathoms within a few miles of the shore, deepening gradually to 150 to 180 fathoms near the verge of the bank. With Cape Aguilhas bearing West by compass distant 7 leagues, the depths are 24 or 25 fathoms; and from 24 to 30 fathoms irregular soundings, grey sand

and shells, are got when it bears North about 5 miles distant. When abreast of False Bay and the Cape of Good Hope, the bank of soundings does not extend far out from the land; for here, the depths are 55, 65, and 70 fathoms, within a few miles of the shore.

Directions for rounding the Cape of Good Hope.

CAPE OF GOOD HOPE, is frequently the boundary of very opposite kinds of weather, for although to the eastward of it, the winds and weather may often be found unsettled and threatening, yet no sooner has a ship got round to the westward of this promontory, than the weather *generally* becomes settled, with a strong and steady wind from the southward.

When abreast of Cape Aguilhas with a brisk S. W. or S. S. W. wind, a ship ought to keep well out from the coast, that she may be enabled to pass the Cape of Good Hope at a proper distance without tacking, and this is particularly necessary in the night.

In volume first of this work, in a bottom note, under the section, marked "South Coast of Africa, from Cape Aguilhas to Algoa Bay," the unfortunate loss of the Arniston has been mentioned, which was occasioned, by bearing away too soon, in order to round the Cape of Good Hope; whereas, she got into Struy's Bay, on the East side of Cape Aguilhas. To guard against such a fatal mistake, the lead ought not to be neglected, (if the longitude is not correctly known) which in thick weather will always point out whether or not, you are sufficiently advanced to the westward, to bear away with safety to round the cape: for, you ought not to bear away, until after losing soundings on the western verge of the Cape Bank; and if soundings are obtained after edging away to the N. Westward, you ought immediately to haul off from the land.

Remarks on the winds and weather betwixt it and St. Helena.

HAVING rounded the CAPE OF GOOD HOPE, ships generally steer a direct course about N. N. W. to N. N. W. $\frac{1}{2}$ W. *by compass*, for St. Helena; but it seems advisable to steer about N. W. by N., until a considerable distance is gained from the western coast of Africa, because you are liable to encounter N. W. and W. N. W. squalls at times, particularly when near the coast. These N. W. squalls do not often happen, but they have sometimes been experienced in both seasons.

On the 26th of April 1796, we rounded the cape, and steered N. N. W. $\frac{1}{2}$ W. by compass with a steady strong trade wind, which continued until we anchored at St. Helena on the 5th of May.

On the 26th of April, 1799, we rounded the cape in the Anna, (being the same day of the month as mentioned above) and steered N. N. W. $\frac{1}{4}$ W., by compass, with a steady wind from the southward, which carried us to lat. 30° S. Here, the wind became light and variable, then veered to northward with cloudy unsettled weather, and some rain; and in a sudden gust from the northward in the night, we lost our fore-top-mast, with 4 men who were furling the top-gallant-sail. These winds continued adverse during 2 days; the southerly wind then returned, which carried us to St. Helena on the 8th of May.

On the 14th of August, 1801, we rounded the cape in the same ship, steered N. N. W. $\frac{1}{4}$ W. by compass with a strong S. S. E. gale, which continued 30 hours and carried us to lat. 31$\frac{1}{2}$° S.; the wind then became light, shifted to N. W. and North, with squalls, cloudy weather and rain. After 3$\frac{1}{2}$ days of adverse winds, the southerly trade prevailed, with which we anchored on the 26th at St. Helena.

Sailing directions.

When round the cape, and having got a moderate distance from the coast, by steering about N. W. by N. *by compass*, a direct course about N. N. W. $\frac{1}{4}$ W. or N. N. W. will be fair, for St. Helena.

If the wind blow strong and veer to E. S. Eastward, an allowance for a leeward current ought to be made, particularly if the weather become cloudy,* and the longitude be not cor-

* Good chronometers are of great utility in running for St. Helena; I have seen the weather continue so

rectly ascertained; for in such case, it will be prudent to get nearly in the parallel of the island, when several leagues to the eastward of its meridian. But if the longitude of a ship is *very exactly* ascertained by chronometers and observations, she may steer direct to make the Island of St. Helena bearing about N. W. or N. W. by W. by compass, the variation* here being 17½° West in 1816; then conform to the instructions in volume first of this work, where a particular description is given of that island, and of the road. It may, however, be useful, to point out the situations of the 2 following dangers, ascertained by Mr. George Thoms, of H. M. S. Northumberland, in his survey of the bank of soundings around the island, in 1815. St. Helena.

Barn Ledge, situated a large ½ or ¾ mile to the S. E. of Barn Point, is about 1½ cable's length in circuit, having generally a heavy ground swell upon it, with depths of 12, 9, 8, and 6 fathoms, to 25, 21, and 20 feet pointed rocks on the shoalest parts, as far as could be judged by the lead. When upon it, Barn Point bore N. W. ¼ N. by compass, distant about ¾ mile, Turk's Cap in 1 with Turk's Cap Battery W. ½ S. to W. ¾ S., distant ¾ mile. The Turk's Cap is a remarkable hill, situated about ½ way between Barn Point and Prosperous Bay. Large ships coming from S. E. should keep George's Island open with Saddle Point (which is 1¾ mile North of it,) until Sugar-Loaf Point, is open with Barn Point, which will carry them clear outside of Barn Ledge; between it and the shore there is 24 and 20 fathoms in a channel a large ¼ mile wide, and close to the ledge on the outside, there is 32 and 34 fathoms. Barn Ledge.

Sperry Ledge, situated at the South point of the island, distant a large mile, and about 1 mile South from Sperry Rock, is a shoal of rocks about 2 cables' lengths in circuit, with depths of 16, 12, and 10 fathoms, to 24 and 18 feet pointed rocks on the shoalest parts, and having often upon it, a heavy ground swell. When upon it, Sperry Rock bore N. by E. ¼ E. by compass, the North Black Rock N. by E, ½ E. nearly touching Sperry Rock, S. W. point of the island about N. N. W., Long Range Point E. by N. ¾ N., (which lies to the East of Sandy Bay.) To avoid this danger, in sailing along the S. E. side of the island to the westward, keep Shore Rock open with Long Range Point, till the northernmost of the Black Rocks opens to the westward of Sperry Rock, and then you may haul up for the S. W. point of the island. About a mile W. by N. of Sperry Ledge, there is a patch of 10 fathoms rocky bottom; between Sperry Rock and the Ledge, there are 24, 26, and 35 fathoms water, and the bank of soundings extends 2 miles outside of the ledge, in a South and S. S. W. direction, with 50 and 58 fathoms fine sand on its outer verge. Sperry Ledge

## 2d. INSTRUCTIONS FOR SAILING FROM ST. HELENA TO THE ISLAND ASCENSION, AND TOWARD THE BRITISH CHANNEL. DESCRIPTION OF THE ISLANDS AZORES.

FROM ST. HELENA, homeward bound, some navigators prefer crossing the equator far westward, with the view of having steady winds, and avoiding a space of variable airs and calms, which they imagine to prevail betwixt the limits of the N. E. and S. E. trade, farther to the eastward. This opinion seems not supported by experience, for some ships when far to the westward, have been detained several days by calms, thick foggy wet weather, and a turbulent swell; when others that crossed the equator in lon. 19° or 20° W. had dry weather and brisker winds, and this has even happened to several ships which passed in Remarks for the route from St. Helena across the equator.

cloudy during the whole of the run from the cape to this island, that no lunar observations could be obtained; and the same case was experienced, during the whole of a passage from St. Helena to England; but this was very remarkable, and probably *seldom* occurs.

* The variation at St. Helena in 1724, was 6°35′ W.

sight of the Cape Verd Islands. It is, however, prudent, not to cross the equator far eastward, that light winds and calms, which often prevail in the vicinity of the coast of Guinea, may be avoided.

The prevailing winds about the equator, have been exhibited in a tabular form, in volume first of this work, where the routes of homeward bound ships will be found, with subsequent directions for ships passing the equator when bound outward: and although those directions, may also answer for homeward bound ships, some brief remarks in this place, may probably be of utility.

Directions for sailing from St. Helena to Ascension.

Departing from St. Helena for Europe, a direct course may be steered for the Island Ascension, which is about N. W. by N. *by compass;* and this part of the passage, a steady S. E. trade generally prevails all the year, with a westerly current at times. The Island Ascension may be passed on either side, at any convenient distance, but ships commonly pass to the westward of it, at from 3 or 4, to 10 or 12 leagues distance.*

From thence to the equator.

From the Island Ascension, steer N. N. W. or N. by W. $\frac{1}{2}$ W. by compass toward the equator, which ought not to be crossed to the eastward of lon. 18° or 19° W., nor to the westward of 24° or 25° W. When the sun is in the northern hemisphere, it may be proper to cross it in lon. 21° to 23° W., because, variable light winds extend a great way out from the coast of Africa, in July, August, and September, whilst the sun is returning from the tropic of cancer to the equator.

To sail from the equator to the northward.

From hence, a North or N. by W. course may be steered if the southerly winds become light, in order to reach the N. E. trade as soon as possible; but if variable light breezes are found to continue far to the northward of the equator, a birth of 40 or 50 leagues at least, ought to be given to the Cape Verd Islands.

Having entered the N. E. trade, the ships sails should be kept good full in crossing it, that her velocity may be increased, to get speedily to the northward. In this route, the sargaso, or gulf weed, will generally be first seen in lat. 24° or 25° N., and it extends as far to the northward as lat. 40° and 41° N.

When ships get to the northward of the northern limit of the trade, in lat. 30° or 32° N., they are generally in lon. 39° to 42° W.

It is *seldom* advisable to pass to the eastward of the Azores, because northerly winds often prevailing betwixt these islands and the coast of Portugal, are unfavorable for pursuing a direct course toward the British Channel. Ships, ought, therefore, to pass round to the westward of the Azores; or should the wind veer to N. Westward when near these islands, the most convenient channel may be adopted to pass through among them, as circumstances require.

It has nevertheless, sometimes happened, that ships which passed to the eastward of the Azores, have got S. W. and West winds, and reached the British Channel sooner than others which went round to the westward of those islands. And a single ship, in time of war, might sometimes adopt the eastern route with advantage, to avoid the enemies cruizers, which frequently take their station to the westward of Flores.

Islands Azores.

AZORES, OR WESTERN ISLANDS, are 9 in number, exclusive of a few small islets or dangers, contiguous to some of them; they are mostly formed of high mountainous land, with steep rocky iron bound coasts, affording no safe harbours for large ships. There are several places where vessels anchor at these islands, all more or less exposed to stormy weather, which prevails greatly in winter. Earthquakes, are also, at times experienced, producing great devastations.

Geo. site of Flores.

FLORES, the westernmost island, extends about 3$\frac{1}{2}$ leagues North and South; the nor-

* Ascension is at present a military station, and a British ship of war remains there. Tristan d'Acunha, is also at present a military station.

thern extremity of which, called Point del Gada, is situated in lat. 39° 33′ N., lon. 31° 11′ W. by a series of lunar and chronometric observations taken by Sir Home Popham in H. M. S. Romney, and agreeing within 2¾ miles of Tofina's survey of these islands.* There is a rocky bank, said to lie about 1 league off the S. E. point of Flores, and anchorage is found in some parts close to the shores of the island.

CORVO, separated from the North end of Flores by a safe channel about 3 or 4 leagues wide, is the N.Westernmost of the Azores, and about 1¼ or 1½ league in extent North and South; its northern extremity being in lat. 39° 44′ N., and Point Pesqueira Alto, the southern extremity, is in lat. 39° 41′ N., lon. 31° 6′ W. These 2 islands are hilly, and may be seen 11 or 12 leagues in clear weather, and are separated from the central group of Azores, by a safe channel about 35 leagues. Geo. site of Corvo.

FAYAL, the westernmost of the central group, is high, about 3 leagues in extent, of circular form; and its western extremity is in lat. 38° 34′ N., lon. 28° 52′ E. Geo. site of Fayal.

PICO, is separated from the S. E. part of Fayal by a narrow channel, having some rocks near the middle of the southern entrance, and this island extends about 5 or 6 leagues nearly W. N. W. and E. S. E. The peak from which the island takes its name, is situated near the S. W. part in lat. 38° 27′ N., lon. 28° 28′ W.; this peak is terminated at the summit by a sharp cone like a sugar loaf, elevated about 7000 feet above the level of the sea. Pico. Geo. site of the Peak.

ST. GEORGE, fronting the northern side of Pico, and separated from it by a safe channel 3 or 4 leagues in breadth, is a narrow island about 7 or 8 leagues in extent W. N.W. and E. S. E.: there is a small road or harbour on the South side of the island, about 2 leagues from the West point, and close to the Point of Velas, where there is a village of the same name. The S. E. extreme of this island, called Point del Topa, is situated in lat. 38° 30′ N., lon. 27° 51′ W. St. George. Geo. site of S. E. Point.

GRACIOSA, separated from the North side of St. George by a safe channel about 7 or 8 leagues wide, is 2 or 2½ leagues in length, having several high hills on it, which give it the appearance of 2 or 3 islands when first seen. The anchoring place is at Santa Cruz, on the N. E. part of the island. The North point of the island is situated in lat. 39° 8′ N., lon. 28° 6′ W.; and the S. E. point, called Point del Carapacho, bears N. 49° E. distant 25 miles from the N. W. point of St. George, and N. 60° W., 29 miles distant from Point Ruba, or the West point of Terceira. Graciosa. Geo. site of North Point.

TERCEIRA, is separated from the S. E. point of St. George, by a safe channel 7 or 8 leagues wide, and it is a middling high land, 5 or 6 leagues in length East and West. Mount Brazil, is a forked hill, situated near the middle of the South coast, in lat. 38° 38½′ N., lon. 27° 13′ W., and close to the sea; it is a good mark for the bay of Angra, which is close to the eastward. Terceira. Geo. site of Mount Brazil.

The city of Angra, is the capital of the Azores, where provisions are plentiful, and at moderate prices. About 1½ league to the eastward of Mount Brazil, 2 steep islets, called Goats Islands, are situated, and 2 miles to the S. E. of them, there are 4 rocks, called Frailes, (Friars) with breakers near them. Angra.

* The geographical situations of the Azores, are *here*, mostly given from the surveys of Fleurieu and Tofina, which agree nearly with each other. These islands, discovered about 1460, were named Ilhas dos Açores by the Portuguese, or the Isles of the Hawks, from the great number of those birds seen there. They are now called, corruptly, Azores.

Directions to sail to that Road.

A vessel bound to Angra Bay or Road, and coming from S. W., South, or S. E., should steer toward Mount Brazil as soon as it is seen; but as the currents are strong and fluctuating, great care should be taken when calm, not to come too near the steep iron-bound coast comprised between Mount Brazil and the West end of the island.

Coming from the northward, round the East end of the island, a wide birth must be given to the South point of Porto Praya, from which a rocky bank extends East and E. N. E. to a considerable distance. In approaching Angra from the eastward, the Frailes and Goats Islands will be discerned; between the latter and the main-island, there is a passage, having 15 fathoms sandy bottom all over, where a ship might anchor in case of necessity. Although there is 24 fathoms water betwixt the 2 Goat Islands, that passage being only a cable's length in width, ought never to be attempted. The channel between Goats Islands and the Frailes, ought always to be preferred, being 2 miles broad, with 90 fathoms water, and clear of danger: or the passage outside of the Frailes, may be adopted, giving a birth to the rock under water, that lies about a musket-shot to the southward of them.

Angra Bay unsafe in stormy weather.

Angra Bay is only about $\frac{1}{2}$ a mile broad, and the bottom being mostly rocky, vessels moor with several anchors, nearest to the western side. When light winds prevail in June, July, August, and September, vessels may be safe in this road; but it being open from S. S. W. to East, there is no shelter from winter storms, which send in a prodigious sea round the mount from S.Westward; so that the only resource at these times, is to proceed to sea on the least appearance of bad weather. The flood sets to N. W., and the ebb to S. E., high water at full and change of the moon about $11\frac{3}{4}$ hours, and the rise of tide is from 4 to 6 feet, according to the wind, but never exceeds 8 feet.

Porto Praya Bay, and the anchorage.

PORTO PRAYA BAY, situated to the northward of the East point of Terceira, is the best among these islands, where a whole fleet might anchor in 24 fathoms sandy ground; it has the form of a crescent, and the point on the North side, called Mountain Point, has near it a small islet to the N. E. The best anchorage is in 24 fathoms sand, with this islet shut in with Mountain Point, and the 2 towers at the bottom of the bay brought in one. With the town bearing from N. W. to N. N. W., ships may also anchor nearer the shore, in 20 and 16 fathoms water. There is a good landing place near the castle, but boats ought not to attempt to land at the bottom of the bay to the S.Westward, where there is a small bank on which they would ground.

Geo. site of St. Michael.

ST. MICHAEL, separated from the S. E. end of Terceira by a safe channel 23 or 24 leagues wide, is the longest of the Azores, being 10 or 11 leagues in extent East and West, but only from 2 to 3 leagues in breadth. The town of St. Michael is on the South side of the island, where vessels anchor in the bay near the shore; but it affords no shelter from storms, which frequently happen in winter. The West point of this island, called Ferraria, is situated in lat. 37° 54′ N. lon. 25° 59′ W. The variation here, about $15\frac{1}{2}$° W. in 1814.

Volcanic danger.

Some violent convulsions of the earth were felt at St. Michael, from July 1810, to February, 1811, and the people inhabiting the western parts of the island, were alarmed by repeated shocks in January of this year, until the 1st of February, when a volcano burst out of the sea, projecting upward, smoke, flames, and combustible matter. The crater appeared about 200 yards in circumference,* and on the 6th of February, being 5 days after the volcano burst forth, it appeared like a rock under water, with the sea breaking furiously over

* The commander of H. M. Sloop Sabrina, landed on this little *new formed* island, and scrambled among the ashes and cinders to a considerable distance, as it was well elevated above the sea at this time; the crater had diffused so much heat to the edge of the sea which washed in upon it, that many fish were seen floating about dead, and the water was very hot. This volcanic isle, was, after a few days, again submerged in the sea; and since that time, there have been some eruptions near the same place.

it. This danger is in lat. 37° 52½′ N., and about 1 or 1¼ mile distant from the nearest shore of the West end of St. Michael, being a little to the S. Westward of Point Ferraria, and in a westerly line from Pico de Ginetes. The fishermen say, there are soundings of 80 fathoms near it. The subterraneous pressure of this volcano, had probably forced up the rocky bottom near the surface of the sea, a considerable time prior to the explosion; for the ship Swift, with all her crew, were lost near, or on the spot, before the appearance of this strange phenomenon.

Geo. site of St. Mary.

ST. MARY, the S. Easternmost of the Azores, is distant about 12 leagues southward from the East end of St. Michael, and like the other islands it is high, but of small extent. The West point, called Maldemarenda, is in lat. 36° 57′ N., lon. 25° 16½′ W.; the town and road of St. Mary, where vessels anchor, is on the South side of the island, near the S. W. point.

Formigas.

FORMIGAS, (Ants.) situated 3 or 4 leagues to the N. E. by N. of St. Mary, and fronting the channel between it and the East end of St. Michael, consist of a range of rocks 7 or 8 in number, of considerable extent North and South. Some of them are low, others 40 or 50 feet of perpendicular height, and the sea breaks very high against them, and also between them in some parts. They are steep to, for no soundings are got until close upon them. The Great Formigas is situated in lat. 36° 17′ N., lon. 24° 56′ W., and it bears N. 34° E. from the peak of the highest part of the island St. Mary, and N. 24° E. from the S. E. point of that island, called Point de Castelo.

Geo. site.

There is said to be situated a shoal of breakers, bearing *true* S. 40° E., distant 1½ league from the Formigas, but its existence seems doubtful.

The channel between the Formigas and St. Michael, is 5 or 6 leagues wide, and free from danger. The little channel, formed betwixt the Formigas and St. Mary, is also safe, about 3 leagues wide, but not so much frequented as the other. They are both destitute of soundings, and the islands St. Michael and St. Mary, are likewise steep to approach.

The 2 great channels among the Azores.

When any of the homeward bound East India ships fall in with the Azores, they ought to adopt 1 of the wide channels, to pass through amongst them to the northward; the largest of which is the western channel, bounded on the West side by Flores and Corvo, and by Fayal and Graciosa to the eastward. If they do not proceed through this channel, they should pass through the channel which is formed on the West side by Terceira and the central group of Azores, and on the East side by the Island St. Michael.

may be used by homeward bound ships.

There are several vigias, or *imaginary dangers*, placed in some charts of the Atlantic Ocean; none of their situations have been ascertained, and they appear to have no real existence.

## 3d. DIRECTIONS FOR ENTERING THE BRITISH CHANNEL, AND TO SAIL INWARD, TO THE DOWNS.

British Channel.

AS ALL SHIPS bound homeward from India, may not be in possession of the charts and instructions necessary for entering the British Channel, some brief directions for that purpose, will *probably* be of utility.

Remarks on the directions for entering it.

Ships proceeding toward the British Channel, have generally been directed to get into the parallel of lat. 49½° N. or 49° 25′ N., when considerably to the westward of Cape Clear, then to steer eastward on this parallel until in soundings of 82 fathoms fine white sand with black and yellow specks, which soundings are found on the outer edge of the bank about 50

leagues to the westward of Scilly. By running 16 or 17 leagues farther to the eastward on the same parallel of latitude, they will have 90 fathoms fine white sand: from hence, continuing on the same parallel about 20 leagues to the eastward, the soundings will decrease to 70 fathoms, but not very regularly in some places; and when in the same parallel, the water shoals to 67 or 65 fathoms shells and small yellow stones or red sand, the Scilly Islands will be nearly abreast. It would be unsafe to approach these islands under 63 or 64 fathoms in the night or in foggy weather, for neither the quality of the bottom, nor the depths of water, will be *always* a *sufficient* guide to point out their proximity. At the distance of about 7 leagues South, S. W., and West, from the nearest of the Scilly Islands, the depth is nearly equal, being 63 or 64 fathoms sand and shells, or ouze and shells; and there is about 50 fathoms within 2 leagues of the outermost rocks, in a S. E., South, S. W., and Westerly direction, with 40 or 45 fathoms nearly close to the S. Westernmost rocks.

THE DIRECTIONS hitherto given for entering the British Channel, by steering to the eastward in the parallel of lat. 49° 25′ to 49° 30′ N., seem only applicable to ships navigated by dead reckoning, or when the longitude is not ascertained by lunar observations, or by chronometers; and even under such circumstances, this seems not to be the best track for approaching the British Channel.

The parallel of lat. 49½° N. should not be chosen to enter the British Channel.

First.—Because ships are obliged to make a more circuitous route from the Azores, to get into the parallel of lat. 49° 25′ N. well to the westward of Cape Clear, than would be requisite in steering a direct course for the Lizard Point; and as S. W. or Westerly winds prevail great part of the year, there can *seldom* be occasion to steer so far to the northward.

Secondly.—Because in time of war, the enemies' cruizers keep *frequently* to the westward of Cape Clear, in lat. 49° to 50° N.; and they are *generally* best avoided, by steering from the W. S. Westward a direct course into the British Channel.

Thirdly.—Because ships by keeping in the parallel of lat. 49° 25′ or 49° 30′ N., have, when near the Scilly Islands, frequently encountered sudden shifts of wind from the southward, whereby they were driven to the N. W. of these islands, into St. George's Channel. From this cause, many ships have been forced to take shelter in Cork, or some of the harbours on the coast of Ireland, where they were detained long by southerly winds; whereas, the same winds would have been favorable for them entering, and running up the British Channel, had they kept a little farther to the southward.

Fourthly.—Because when S. W. or Southerly winds prevail, the flood tide sets 8 or 9 hours to the northward into St. George's Channel, and the ebb only 3 or 4 hours to the southward: by which, ships pursuing the route in the parallel of lat. 49° 25′ or 49° 30′ N. are liable to be drifted among, or to the northward of the Scilly Islands, during thick foggy weather, when the latitude is not ascertained by correct observation.

From what has been stated, the following route *seems* to be the most eligible one, for entering the British Channel.

Directions for approaching and sailing into it.

HOMEWARD BOUND SHIPS, after passing the Azores, should shape a direct course toward the Lizard Point, inclining a little to the northward as circumstances require. From January to May, when N. E. or Northerly winds frequently prevail outside, and in the entrance of the British Channel, it will be proper to get into about lat. 49° N., when the meridian of Cape Clear is approached: an easterly course for the Lizard Point ought then to be followed, and if the wind blow steady from northward, the parallel of 49° 30′ N. may be preserved in passing the Scilly Islands.

From April or May, to November, or December, S. W. and Westerly winds generally prevail; ships may then steer to get into about lat. 48° N. when they reach the meridian of Cape Clear, and from this situation a direct course may be steered for the Lizard Point. But at all

times, navigators about to enter the British Channel, ought to act according to prevailing circumstances, by hauling to the northward or southward, as the winds render advisable.

Winds. It may be observed, that N. E. and Northerly winds greatly prevail in February, March, and April; at all other times, S. W. and Westerly winds are generally experienced. Next to these, Southerly, and N. W. winds prevail near the entrance of the British Channel; but those from the N. W. quarter, are seldom of long continuance, and generally veer to westward, although at times, they veer to North and N. Eastward.

and currents. When strong westerly winds continue, an easterly current is frequently forced by them toward the British Channel, but with steady easterly winds, the current has been often found to set out to the westward; more particularly when the Bay of Biscay is open, a S. Westerly current is liable to be experienced.

Should a ship happen to approach the projecting part of the French coast at the entrance of the channel, it may be observed, that the Ushant Lights are in lat. 48° 28′ N. and they are generally placed in lon. 5° 3½′ W., but Captain Heywood in 1809, made them in lon. 5° 13¼′ W., or 1° 44¼′ West from Torbay anchorage, by good chronometers. The soundings near Ushant are 64 and 65 fathoms; high water about 4½ hours on full and change of the moon. Variation about 25¼° W.

Geo. site of Ushant Lights.

ST. AGNES LIGHT, in lat. 49° 53′ 37″ N., lon. 6° 19′ 23½″ W., is easily known by *revolving* on an axis, the light being obscured for a time in each revolution. The Island St. Agnes, on which it is placed, is the southernmost of the Scilly Islands that is inhabited, but rugged islets or dangerous rocks, stretch from it about 5 miles to the W. S. Westward, having irregular soundings from 40 to 50 fathoms about 1 or 2 miles S. W. from them, and a rocky spot with overfalls from 50 to 16 fathoms, about 5 miles S. S. W. from them.

Geo. site of St. Agnes Light; directions for avoiding the Scilly Islands.

Ships steering into the channel, ought to keep well to the southward of the Scilly Islands, if uncertain of the latitude when passing them; and on no account, ought these islands to be approached under 60 or 62 fathoms in the night, or in foggy weather. To the southward and abreast of them in lat. 49° 20′ N., the depth is 70 fathoms yellow or white sand, and the tide flows here, to 4½ hours on full and change of the moon. Near, and among the Scilly Islands, the tides set very irregular, frequently all round the compass.

When certain of having passed the Scilly Islands, a more northerly course should be steered to make the land about the Lizard Point, if the wind is favorable; but with a scant southerly wind, or in thick foggy weather, that point ought not to be approached under 45 or 46 fathoms, which depths are about 3 leagues off it; and there is 10 or 12 fathoms close in with the rocks, called the Stags, that front the point. The 2 lights on the Lizard Point, are conspicuous when the weather is clear, and at such times, they may be made with safety in the night; there is no danger in approaching the point within 2 miles, with day-light, the soundings being irregular from 30 to 40 fathoms at that distance.

Lizard Point and Lights.

Abreast of the Lizard Point, the stream of flood runs to the eastward in mid-channel, till nearly 8 hours on full and change of the moon, and it is then about ½ ebb upon the shore.

Between the Lizard Point and the Eddystone, a ship may stand off to 50, and in-shore, to 42 fathoms, but not nearer; as there is 36 fathoms nearly in the stream of the Eddystone. From hence, to the Start Point, a ship may approach the shore to 32 fathoms, and stand off to 46 fathoms.

Eddystone.

About 3 or 3½ miles W. N. W. *true* bearing from the Eddystone, is situated the Hand Deep Bank, having only 4 fathoms on it at low water spring tides, and 30 fathoms very near it.

Having passed the Lizard Point with *unfavorable* weather, so as to prevent it from being discerned, care ought to be taken to get a sight of the Eddystone Lighthouse, or at all events, of the land over the Start Point, which is a sloping oblong hill. This is indispensible, if the situation of a ship has not been previously ascertained, to avoid getting over on the French

To proceed from hence up channel.

coast near the Caskets and adjoining dangers; for the indraught of the tide between the coast of Brittany and the Islands of Jersey and Guernsey, has proved fatal to several ships steering up channel, which did not keep within a proper distance of the English coast.

THE CASKETS, having 3 lights, are easily known if discerned in the night; them and the Bill of Portland, bear nearly *true* North and South of each other, distant about 13 or 14 leagues: as the tides run strong here, and being the narrowest part of the channel until the strait of Dover is approached, it becomes more necessary to make the land about the Start Point, in order to shape a proper course to avoid the dangers off the French coast, and to give a birth to the Shambles and Race of Portland. In this part of the channel, the tides run from 2 to 3 miles an hour; and between Alderney and Cape La Hogue, from 6 to 7 miles per hour, which is called the Race of Alderney.

From the Start Point, a course ought to be pursued up channel as circumstances require, borrowing toward the English coast with northerly winds, or keeping near mid-channel, with South and S. W. winds. If the Start Point has been passed at the distance of 4 or 5 leagues, an E. by S. course *by compass*, will be proper to steer with a fair wind, the variation of the compass being at present, 1817, about 25° to 25½° in the entrance of the British Channel.

Variation of the compass at the entrance of the channel.

Lieutenant Murdoch M'Kenzie, Marine Surveyor to the Admiralty, made it 23° West at Tor Bay, in 1781, and 23° W. at St. Helen's in 1783. Lieutenant John Murray, in a survey of the coast near Beachy Head, made the variation at that place 23° W. in 1806. Mr. Grœme Spence, a very accurate surveyor, who under the direction of the Admiralty Board, surveyed minutely great part of the coasts of England, made the variation 24° 45′ W. at the Scilly Islands in 1792. From 1792 to 1817, a period of 25 years, the total increase of the variation in London has been 33½ minutes West, which added to the observed variation by Mr. Spence in 1792 at the Scilly Islands, will make the variation there 25° 18½′ W. in 1817, which is probably near the truth; for the annual increase of variation cannot differ *much* at the Scilly Islands from that observed at London, as the quantity is very *small*, from the magnetic pole being nearly stationary; and it is thought by some persons, that the westerly variation is beginning to decrease. At the apartments of the Royal Society, Somerset House, the variation is at present 24° 17′ 50″ West, and the dip about 72° 32½′ N.

Ships entering the British Channel, may allow about 26° of West variation until they approach the Scilly Islands, 25° in running up to the Isle of Wight, and 24° from thence to Dungeness. But it should be observed, that with the ship's head easterly, in steering up channel, the West variations will probably be from 1° to 3° or 4° *less* than the *true* variation; and the same *excess* of West variation will probably be experienced if the ship's head be to the westward: exemplifications of which, will be found in the introduction to this work.

To steer from the Start Point up channel.

FROM THE START POINT, an E. by S. course steered by compass, will in *general* with a fair wind, carry a ship directly up channel until abreast of Beachy Head; which ought not to be approached under 18 fathoms in a large ship, on account of the shoals that lie to the S. E and eastward of it. When clear of them, she must haul up East and E. N. Eastward for Dungeness, in order to give a birth to the Ridge and Varne Shoals, in proceeding toward the South Foreland.

Caution requisite in sailing up with a strong S. W. wind.

It may be proper to observe, that an accumulation of water is forced into the British Channel with strong S. W. winds, the tides being *then* much higher than at other times. The velocity of the flood is also increased by these winds, for it continues an hour, or more, longer than usual, the ebb being greatly repressed by them. From this circumstance, ships running up channel with a strong S. W. gale, are liable to be *a-head* of their reckoning, if a proper allowance is not made: for by entering it with the first of the flood, and running at the rate of 8 or 10 knots by the log, they will carry the tide with them 10 or 11 hours, which will probably carry them all the way from the Start up to Beachy Head, or in some

cases, nearly to Dungeness. From this cause, several ships have got upon the Ridge or Varne Shoals, or over toward Cape Grisnez, when by the reckoning they had scarcely passed Beachy Head.

THE WEATHER in the CHANNEL, being frequently very thick and foggy, great caution is necessary when navigators are not well acquainted, particularly if they encounter variable winds blowing strong. Between the Start Point and the Bill of Portland, a ship may keep in from 30 to 36 fathoms; by not exceeding the latter depth, she will avoid the strong indraught between Guernsey, Jersey, and their contiguous dangers. Off the Bill of Portland, the flood runs to the eastward until 10¼ hours at full and change of the moon. The Race and Shambles should not be approached under 26 fathoms, for the water deepens to 40 and 45 fathoms in some holes near the Race, with very uneven rocky bottom.

or in foggy weather.

Depths which ought to be preserved in sailing from the Start Point,

Between the Bill of Portland and Dunnose, from 35 to 26 fathoms are good depths to keep in, with a N. W. or northerly wind; by not coming under 26 fathoms, the indraught toward the Needles and Freshwater Bay, will be avoided. The lead ought to be kept going, when the Isle of Wight is approached during thick weather, for by neglecting it, many ships have been lost.

to Dunnose,

The flood runs to the eastward off Dunnose, in mid-channel, until about 11 hours at full and change of the moon; and about 2 hours sooner on the shore, it is high water. The South part of the Isle of Wight ought not to be approached close, for the shore is fronted by rocky uneven bottom, with strong ripplings, during spring tides.

FROM DUNNOSE to the Owers, a ship may approach the shore to 22 or 20 fathoms, and stand off to 30 fathoms; when near the Owers in thick weather and light winds, the lead ought not to be neglected, because the last ¼ flood and the whole of the ebb, set strong over that dangerous bank toward St. Helen's Road, and 20 fathoms water is very near to it. To the eastward of the Owers, lies KINGSMORE SHOAL, extending N. E. and S. W. about 2 miles, having 5½ and 6 fathoms hard gravel on its S. E. part, which is the least water. From its S. E. extremity the *true* bearings and distances of the following places were ascertained by Col. Beaufoy, who surveyed this shoal, viz. Beachy Head signal-mast E. 5° 9′ N., distant 26¼ miles; West side of Chanctonbury Ring N. 9° 47′ E., distant 10 miles; High Down Windmill N. 4° 31′ E., distant 8⅓ miles; Chichester Spire N. 58° 55′ W., distant 15⅔ miles; and the Owers Light W. 12° 34′ S., distant 9 miles.

and from thence to the Owers.

Kingsmore Shoal.

Between the Owers and Beachy Head, from 28 to 18 fathoms are good depths to preserve; by not borrowing under 18 fathoms, a ship will pass outside of the shoals that lie to the E. S. E. of Beachy Head, the outermost of which is the WIDE MOUTH SHOAL, generally called the Royal Sovereign's Shoal, because H. M. ship of this name was nearly lost on it, which is of circular form, about 500 feet in diameter, with 12 or 13 feet water on it at low spring tides. This shoal was lately examined by Col. Mark Beaufoy, accompanied by some fishermen, who ascertained its relative position from the following places by sextant.

Beachy Head.

Wide Mouth Shoal.

Bexhill Church bears *true* N. 17½° E., distant 6.34 nautic miles from the shoal; Willington Mill *true* W. 18¾° N., distant 7.65 miles; Beachy Head flagstaff *true* W. 2½° S., distant 6.61 miles: and the shoal bears E. S. E. by compass from Beachy Head flagstaff. When upon the shoal, Murray's Tent is on with the East knowl called Tillum, and the grove near Hollywell on with the Chalk Pit and 3 Bergs.

To avoid the shoal in coming up channel, when round Beachy Head, observe a spot called Greenland, which keep open with the Bluff Head, and steer E. by N. by compass, to keep clear of the shoal, and you will fetch Dungeness lighthouse.

There is said to be another patch of this shoal with 4 fathoms water on it, bearing by

compass about E. S. E. $\frac{3}{4}$ S. from Beachy Head, distant $6\frac{1}{2}$ miles, about 1 mile outside of the former; and another patch called the Horse of Willington, is said to lie within them.

Off Beachy Head, the flood runs to the eastward until $11\frac{3}{4}$ hours on full and change of the moon.

By bringing either of the 3 windmills on with the sea houses at East Bourne, there is good anchorage in hard blue clay, and safer riding than at Dungeness.

To sail from Beachy Head to Dungeness.

From the shoals off Beachy Head to Dungeness, a ship may stand off to 20, and inshore to 12 fathoms; by not coming under this depth, she will pass clear outside of the shoals that lie to the West and eastward of Dungeness. Here, the flood, which enters the channel from westward, comes in contact with the flood that comes from the North Sea through the Strait of Dover, which is called *the meeting of the tides*. Their direction and velocity hereabout, depend much on the strength of the prevailing winds, being subject to great irregularities at times.

Directions for sailing from thence,

FROM ABREAST OF DUNGENESS, a ship must not stand off farther than 17 or 18 fathoms, on account of the Varne; nor under 12 fathoms toward the shore, until clear of the ledge of rocks that projects above a mile from the shore to the westward of Folkstone. When to the eastward of this ledge, the shore is safe to approach to 10 fathoms, and to avoid the Varne and Ridge, in passing from Folkstone to Dover, a ship should keep within 3 miles of the shore.

Proceeding from Dover Road toward the Downs, 17 fathoms would carry a ship outside of the South Sandhead, the track of 15 fathoms is directly toward it, and 12 or 13 fathoms will carry her within it; but the South Foreland being pretty steep to, many ships have run upon the shore there, in the night, during thick foggy weather, because they were fearful of getting near the Goodwin Sand. When the South Foreland lights are seen, a ship will not get upon the main, if the lights are kept in sight from the deck over the land; but she ought

round the South Foreland,

not to come under 10 or 11 fathoms off the pitch of the Foreland, because these depths are only about $\frac{1}{2}$ mile from the shore, which is steep in this place from 10 to 6 fathoms; and from the depths of 6 or 7 fathoms, a ship might ground on the rocks before another cast of the lead could be obtained.

WHEN SHIPS are obliged to run from Dover Road for the Downs during very thick weather in the night, when the lights are not seen, it is certainly preferable to borrow toward the main rather than venture near the Goodwin Sand; but in doing so, great caution is requisite, because the soundings are not a *perfect* guide, for the depths decrease a little near the South Sandhead, as well as toward the main.

The best track *appears* to be, to keep along the shore in 11 to 12 fathoms, under easy sail, that soundings may be got exactly, and when round the pitch of the Foreland, it will be prudent to haul up well to the northward until a cast of 9 or even 8 fathoms is got, to be certain that the decrease of depth is on the main; but in doing this, care must be taken to

into the Downs.

heave the lead quick, and on no account ought a ship to borrow under 8 fathoms toward the shore, until she anchor in the Downs.

Rocks West of Natuna.

PYRAMIDAL ROCKS, in lat. 4° $5\frac{1}{2}'$ N., lon. 107° $24\frac{1}{2}'$ E. bearing W. by N. from the highest part of Great Natuna distant 12 or 13 leagues, consist of a clump of rugged aspect, elevated about 20 or 25 feet above the sea, on the East side of which at 4 miles distance, the Windam and Coldstream passed on the 17th of January 1817, and determined the geographical situation by correct observation and chronometers; at noon when the highest part of Great Natuna bore East, the rocks bore N. by W. $\frac{1}{2}$ W. distant about 7 miles.

FINIS.

# INDEX TO VOLUME SECOND

OF THE

# *INDIA DIRECTORY.*

NOTE.—The Places marked with *, have their Latitudes and Longitudes described in the work.—Those marked with †, have their Latitudes only inserted.—I, signifies Island, Is. Islands, R. River, C. Coast, Ca. Cape, E. East, W. West, N. North, & S. South.


A.

| | | Page. |
|---|---|---|
| †Abai Harbour, | Borneo, W. | 347 |
| *Abreogoes Shoal, | Pacific Ocean | 443 |
| Abula R., | Luconia, N. | 326 |
| *Achen | Sumatra | 16, 42, 151 |
| Achow Is. | Canton R. | 272, 273 |
| Acoong Chow, | China S. | 298 |
| Adam's I., | S. Pacific Ocean | 508 |
| †Adder's I., | Luconia, W. | 323 |
| Adenara I., | Flores Strait | 470 to 473 |
| *Admiralty Is., | Pacific Ocean | 516 |
| *Adolphus Mount, | Ditto Ditto | 511, 513 |
| *Adventure Bay, | Van Diemen's La. | 496 |
| *Agnes, St. Light & I., | Scilly Is. | 533 |
| Aguilhas Bank & Ca., | Africa, S. | 526 |
| *Aiou I., | Yowl Is. | 424 |
| Alabat I., | Luconia, E. | 346 |
| *Aladin Is., | Bengal Bay | 24 |
| †Alamagan I., | Marian Is. | 442 |
| Alass, | Sumatra, W. | 73 |
| *Albatross I., | Bass' Strait | 499 |
| Albion's I., | Moluccas | 415 |
| Alcoran, | Tonking R. | 247 |
| Alderney Race, | English Channel | 534 |
| Algoa Bay, | Africa, E. | 524, 525 |
| Aligator Bay, | Flores, W. | 466 |
| Aligator I., | Sincapour Strait | 186 |
| Aliguay I., | Mindanao, N. | 342 |
| *Alike Is., | Borneo, E. | 366 |
| †Alimpapan Point, | Mindanao, W. | 386 |
| Alkmaar I., | Batavia Road | 104 |
| Allang Is., | Malacca Strait | 156 |
| †Allang Point, | Amboina I. | 488 |
| Allass Strait, Sumb., | W. | 363, 460, 448, 449 |
| Alloo Strait, | Lombleu I. | 473 |
| Ama-cock Pt., | Canton R. | 267 |
| Amahay Bay, | Ceram, S. | 487 |
| *Amblaw I., | Moluccas | 486 |
| *Amboina I. & Bay, | Moluccas | 488 |
| Amboina Shoal, | Celebes, S. | 407 |
| Ambolon I., | Mindora, S. | 390 |
| Amboon Harbour, | Borneo, W. | 347 |
| Amelia's Bank, | Banca Strait | 118 |
| Amoy I., | China, E. | 304 |
| †Ampanan, | Lombock, W. | 458 |
| Ampat Pulo | Sumatra, W. | 60 |
| *Amphitrite Is., | China Sea | 252 |
| *Amsterdam I., | Engano I. | 86 |
| Amsterdam I., | Batavia Rd. | 102 to 104 |
| *Amsterdam I., | New Guinea, N. | 435 |
| *Amsterdam I., | Moluccas | 484 |
| Amul I., | Luconia, W. | 322 |
| †Analaboo, | Sumatra, W. | 48 |
| *Anambas Is., | China Sea | 214, 313 |
| Anatajan I., | Marian Is. | 442 |
| *Andaman, Great | Bengal Bay | 27 |
| *Andaman Is., | Ditto Ditto | 26 to 32 |
| *Andaman, Little | Ditto Ditto | 32 |
| Andaman Port, | Great Andaman | 30 |
| Andaman Strait, | Ditto Ditto | 31 |
| *Andrada Rock, | China Sea | 237 |
| Andres St. Port, | Philippines | 345 |
| *Andrew St. Is., | N. Pacific Ocean | 438 |
| *Angelica's Shoal, | near Flores | 469 |
| *Anger, | Java, N. | 98 |
| Anghor Colley, | Chittagong | 2 |
| *Angour I., | Pellews | 439, 440 |
| Angra Bay, | Azores | 529, 530 |
| Angue Is., | Andamans | 31 |
| Annam Pulo | Sumatra, W. | 60 |
| *Anna Pulo | N. Pacific Ocean | 438 |
| Ann Grab Point, | Callam Strait | 171 |
| Anson's Bay, | Canton R. | 290 |
| *Antelopes Is. | Kangelang, S. | 455 |
| *Antipodes I., | S. Pacific Ocean | 508 |
| †Antique Bay, | Panay, W. | 388 |
| Antury Shoal, | Marian Is. | 442 |
| Anung-hoy, | Canton R. | 289, 290 |
| Anza Pulo, | Malacca St. | 169, 170 |
| *Aor Pulo, | China Sea | 217, 313 |
| Aparri, | Luconia, N. | 326 |
| *Apo I., | Mindora Strait | 391 |
| Apomee I., | Macao Road | 284 |
| *Apo Shoal, | Mindora Strait | 390 |
| Apra Port, | Marian Is. | 442 |
| †Aracan C., | Bengal Bay | 1, 4 |
| *Archipelago, | China Sea | 316 to 320 |
| *Arentes I., | Java Sea | 401 |
| Arfak Mountains, | New Guinea, N. | 435 |
| Armstrong's Ch., | Bass' Strait | 500 |
| †Armuyden Bank, | Java Sea | 107 |
| *Arrecifes I., | Carolinas | 522 |
| †Arroa Long, | Malacca Strait | 163, 199 |
| *Arroa Round, | Ditto Ditto | 163, 199 |
| *Arroe I., | Timor Sea | 481 |
| *Arrogant's Shoal, | Java Sea | 364, 400 |
| *Arsacides I., | S. Pacific Ocean | 419 |
| Ascension I., | Atlantic Ocean | 528 |
| Asia Shoal, | Sumatra, W. | 72 |
| *Asia's Is. | Pacific Ocean | 424 |
| †Asloman Village, | Panay, W. | 388 |
| *Asses Ears, | China, S. | 275 |
| Asses Ears, | Pulo Timoan | 218 |
| *Assumption I., | Marian Is. | 442 |
| Attuee Pulo, | Ceram, N. | 487 |
| *Auckland's (Lord) Is. | S. Pacific Oc. | 507 |
| †Augusta I., | Dampier's Strait | 426 |
| Augusta Shoal, | | 427 |
| *Augustine Cape, | Mindanao, S. | 379 |
| Aurora I., | New Hebrides | 521 |
| Ava C., | Bengal Bay | 7 |
| Ava R., | Ava C. | 9 |
| †Ayer Besar Pulo, | Sumatra, W. | 65 |
| †Ayer Bongy Bay, | | 56 |
| Ayer Dicket, | | 68 |
| Ayer Etam, | | 68 |
| Ayerlaboo | N. | 152 |
| Ayer Ketcheel Pu | W. | 66 |
| Ayer Pulo, | near Padang | 60 |
| Ayer Pulo, | Sumatra, W. | 66 |
| Ayer Raja, | | 67 |
| Ayer Ruttah, | | 68 |
| Ayer Watchey, | Gillolo, E. | 419 |
| Aypour, | Sumatra, W. | 68 |
| Azores, | Atlantic Ocean | 528 |

B

| | | |
|---|---|---|
| Baakele Bay, | Celebes, S. | 406 |
| *Babber I., | Banda Sea | 481 |
| Babee Besar, | Sumatra, W. | 65, 66 |
| Babee Ketcheel, | Sumatra, W. | 65 |
| Babee Pulo Bay, | Ditto, Ditto | 66 |
| Babel I., | Bass' Strait | 500 |
| *Babian I., | Java Sea | 400 |
| *Babuyan Is., | Luconia, N. | 327 |
| Baby Pulo, | Sumatra, W. | 78 |
| †Baby Pulo, | Java, N. | 101 |
| Baby Pulo, | China Sea | 217 |

| | | Page. |
|---|---|---|
| †Baby Pulo, | Timor Sea | 475 |
| Baby Pulo, | Ceram, W. | 487 |
| Bac I., | Cochin China | 240 |
| Baccar Pulo, | Sumatra, W. | 64 |
| Baco Is. | Luconia, S. | 345 |
| Bagatoa I., | Ditto, Ditto | 345 |
| Baglawang Is., | Celebes Sea | 409 |
| Baguan I., | Sooloo Sea | 342 |
| †Babalatolis I., | Sooloo Sea | 340 |
| Bahi, | Luconia, E. | 346 |
| *Bajadore Cape, | Luconia, N | 325 |
| Bakeck Point, | Tsiompa | 239 |
| †Balabac I., | China Sea | 320, 338 |
| Balabac Straits, | Ditto, Ditto | 337, 339 |
| *Balabalakan I., | Macassar Strait | 372 |
| *Balagonan Point, | Mindanao, W. | 386 |
| Balambangan I. & H., | Borneo N. | 337, 338 |
| *Balambouang Bay, | Bally Strait | 457 |
| Balanac Point, | Luconia, W. | 324 |
| Baleekpappan Bay, | Borneo, E. | 372 |
| *Bale of Cotton Rock, | Bengal Bay | 76 |
| *Balintang Is., | China Sea | 329 |
| Ballook Ballook I., | Sooloo Sea | 385 |
| Ball's Pyramid, | S. Pacific Ocean | 508 |
| *Bally Mountain, | Bally I. | 457 |
| Bally Strait, | Java, E. | 362, 456 |
| *Bally Town, | Lombock, E. | 491 |
| Balu-Lagong, | Borneo, W. | 349 |
| Bambeck Shoal, | Malacca Str. | 173, 174 |
| *Bampton's Shoal, | S. Pacific Ocean | 509 |
| *Banca I. & Strait, | Celebes, N. | 375, 376 |
| †Banca S. Point, | Banca I. | 111 |
| Banca Strait, | Sumatra, E. | 112 to 123, 136 |
| *Bancawang I., | Sooloo Sea | 340 |
| †Bancoongong Bay & R., | Sumatra, W. | 50 |
| *Bancoonaan I., | Sooloo Sea | 340 |
| *Banda Is., | Banda Sea | 490, 491 |
| Banda Neira, | Banda Is., | 490, 491 |
| Banda Sea, | Ceram, S. | 398, 482 |
| Bandar | Sumatra | 74 |
| Banditte I., | Lombock Strait | 459 |
| *Bangalore's Shoal, | Flores, N. | 469 |
| †Bangri, | Junkseylon, N. | 24 |
| *Banguey I. & Peak, | China Sea | 337 |
| Bangui Port, | Luconia, N. | 326 |
| †Baniak Pulo, | Sumatra, W. | 78 |
| Banjoan I., | Timor Sea | 480 |
| Bankok, | Siam R. | 223 |
| Bankole, | Sumatra, W. | 52 |
| *Banks, Ca., | New S. Wales | 502 |
| Bankshall I., | Canton River | 294 |
| Banks Strait, | Van Diemen's La. | 500 |
| Bantal R., | Sumatra, W. | 68 |
| Bantam Bay, | Java, N. | 100 |
| Bantam Ca., | Cochin China | 244 |
| Bantam Hill, | Ditto, Ditto | 101 |
| Bantam Point, | Ditto Ditto | 99 |
| Bantay, I., | Luconia, W. | 325 |
| Banton I., | Philippines | 345 |
| Baragu R. & Point, | Pegu | 12, 13 |
| *Barbe St. I., | China Sea | 212 |
| †Barbucit False Hill, | Malaya E. | 192 |
| †Barbucit Hill, | Malaya, S. | 190 |
| Bar Creek, | Callam Strait | 171 |
| Bardia, Pulo, | Siam Gulf | 223 |
| Barette I., | Luconia, N. | 328 |
| *Baring's Bay, | Sandalwood I. | 467 |
| †Barn I., | Gaspar Straits | 127 |
| Barn I., | Malacca Strait | 186 |
| Barn Ledge & Point, | St. Helena | 527 |
| Barqos, | Sumatra, W. | 52 |
| *Barren Ca. & I., | Bass' Strait | 500 |
| *Barren I., | Bengal Bay | 33 |
| Barren I., | China S. | 263 |
| *Barrier Reefs, New S. Wa. | | 509, 512, 514 |
| Barwell I., | S. Pacific Ocean | 521 |
| *Baseelan I., | Sooloo Sea | 382 |
| Baseelan Strait, | Mindanao S. | 383, 492 |
| *Bashee Is., | China Sea | 329, 330 |
| Bassar Pulo, | Ceram, N. | 487 |
| Basseen R., | Ava, S. | 9 |
| Bass' Harbour, | Ladda Is., | 157 |
| *Bass' Strait, Van Diemen's L. | | 497 to 500 |
| *Batacarang Point, | Sumatra, E. | 118, 120 |
| Batac I., | Samar, N. | 344 |
| Batangan Cape, | Cochin China | 244 |
| Batangas Bay, | Luconia, S. | 345 |
| Batang Capay Bay, | Sumatra, W. | 66 |
| Batangpally Is., | Gillolo Passage | 429 |
| *Batan I., | Bashees | 330 |
| *Batavia, | Java, N. | 104, 105 |
| *Batchian I & Strait, | Moluccas | 484 |
| †Bateman Bay, | New S. Wales | 501 |
| Batoa Pulo, | Sumatra, W. | 56, 62, 80, 81, |
| Bato Balow, | Sooloo Sea | 382 |
| Batomande Point, | Borneo | 347 |
| Batoo-Bara, | Sumatra, N. | 154 |
| Batoo Mama Pt., | Sumatra, W. | 54 |
| Batsha | Tonking R. | 247 |
| Battakeeka Fort, | Banda Is., | 491 |
| Battam I. & N.E. Pt., | Malac. Str. | 189, 193 |
| Battanta I & Reef, Pitt's Str. | | 425 to 432 |
| Battoblat Hill & Point, | Borneo, W. | 349 |
| *Batto Gady, | Timor, N. | 477 |
| Batto Lombo I., | Moluccas | 484 |
| Battoo Baloo, | Malacca Strait | 180 |
| Battoo Basroo, | Ditto Ditto | 52 |
| Battoo Mongo | Sumatra, W. | 84 |
| *Batto Pulo, | Timor, N. | 477 |
| Battuwang Bay, | Sumatra, W. | 66 |
| †Batty Malve I., | Bengal Bay | 34 |
| *Baubelthouap I., | Pellew Is. | 438, 440 |
| Bawang, | Luconia, S. | 345 |
| Bayat I., | Bashees | 330 |
| Beachy Head, | England, S. | 534 to 536 |
| Bear and Cubs, | China, E. | 305 |
| Bee-Hive Mount, | New Guinea, N. | 435 |
| †Bejaren I., | Celebes, N. | 376 |
| †Belawn I., | Sooloo Sea | 384 |
| *Bellona's Shoals | S. Pacific Ocean | 509 |
| †Belvidere's Shoals, | Gaspar Straits | 129 |
| Bencoolen R., | Sumatra, W. | 69 |
| †Bencoonat, | Sumatra, S. | 75 |
| Bengal Bay, | Aracan, W. | 1, 523 |
| Bengal Passage, | Achen Is. | 40 |
| Benjar R., | Borneo, S | 355 |
| Berak Point, | Celebes, S. | 406, 408 |
| †Bergen I., | Sumatra, W. | 85 |
| Berg Wakoo, | Ceram, N. | 488 |
| †Beringa Pulo, | Rhio Strait | 139 |
| Bernardino St I., | Luconia, S. | 344 |
| †Bessy Pulo, | Sunda Strait | 93 |
| Bexhill Church, | England, S. | 535 |
| *Bias Bay, | China S. | 300 |
| †Bidan Pulo, | Malacca Strait | 159 |
| *Biema Bay, | Sumbawa, N. | 463 |
| †Bigan Gap and Road, | Luconia, W. | 324 |
| †Billimbing Bay and R., | Sumatra, S. | 75 |
| †Billiton I., | Java Sea | 135, 259 |
| Bill of Portland, | England, S. | 534, 535 |
| Binkang Bay, | Cochin China | 240 |
| *Bintang Hills, | Bintang I. | 193, 195 |
| Bintang I., | China Sea | 193 |
| Bintango Pulo, | Sumatra, W. | 64 |
| Bird I., | China, E. | 307 |
| *Bird I., | Marian Is. | 442 |
| *Bird I., | S. Pacific Ocean | 509 |
| Bird I, | Sumatra, W. | 52, 63 |
| *Bird Is, | Africa, S. | 524, 525 |
| Birdnest Is., | Borneo, W. | 351 |
| Biscay Bay, | Spain, N. | 533 |
| †Bishop and Clerk | S. Pacific Ocean | 507 |
| Black Jack, | Cochin China | 244 |
| Black Mount, | China, S. | 302 |
| *Black Pyramid, | Bass' Strait | 499 |
| Black R., | Malacca Strait | 170 |
| Black Rock, | China, S. | 277 |
| Black Rock, | Bencoolen | 72 |
| Black Rock False, | Ditto | 72 |
| Black Rock, | Queda | 157 |
| Black Rock Reef, | Banca, E. | 131 |
| Black Rocks, | Sapy Strait | 464 |
| †Blair's Harbour, | Malaya, E. | 249 |
| †Blenheim's Shoal, | Malacca Strait | 165 |
| Bluff Point, | Canton R. | 267 |
| Bluff Point, | China, S. | 266 |
| Boat Rock, | Ditto Ditto | 263 |
| Bobeck Pulo, | Sumatra, W. | 63, 64 |
| Bocca Tigris, | Canton R. | 289, 290 |
| *Boegeroens | Celebes, S. | 408 |
| †Boele Comba, | Ditto Ditto | 406 |
| *Bolina Cape, | Luconia, W. | 324 |
| Bolt Head, | New S. Wales | 514 |
| Bombay, | Hindoostan, W. | 524 |
| *Bombay's Shoal, | China Sea | 253 |
| *Bombay's Shoal, | Palawan, W. | 320 |
| †Bomige Is., | Borneo, E. | 374 |
| †Bominy Harbour, | Chittagong | 4 |
| Bompoka I., | Nicobars | 35 |
| Bone Roaster | Japan Is. | 335 |
| *Bongo Bay, | Mindanao, S. | 380 |
| †Boni Bay, | Celebes, S. | 410 |
| *Boni I and Road, | Waygeeooe, N. | 423 |
| *Bonoa I., | Ceram, W. | 486 |
| Bonthian, | Celebes, S. | 406 |
| Boobooan I., | Sooloo Sea | 384 |
| *Booby I., | Torres Strait | 512 to 515 |
| *Booby Shoal, | S. Pacific Ocean | 509 |
| *Booca Bay, | Rotto I. | 479 |
| *Boo Is., | Moluccas | 418 |
| Bool, | Celebes, N. | 370 |
| Boongas Bay, | Sumatra, W. | 63 |
| †Boonting Is., | Malacca Strait | 159 |
| Booroosa Caper, | Sapy Strait | 464 |
| Borne, | Sumatra, S. | 89 |
| Borneo, E. | Macassar Strait | 370 |
| Borneo Proper R., | Borneo, W. | 347, 348 |
| Borneo S., | Java Sea | 355 |
| *Borneo Shoals, | China Sea | 318 |
| Borneo W., | Ditto Ditto | 346 to 352 |
| *Boscawen Ca., | New Hebrides | 519 |
| *Botany Bay, | New S. Wales | 502 |
| *Botany I., | New Caledonia | 519 |
| *Botel Tobago Xima, | China Sea | 331 |
| †Botel Tobago Xima little | Ditto | 331 |
| Bottle Is. & Reef, | Malacca Strait | 170 |
| *Bougainville's I. & Sh., | S. Pacific Oc. | 515 |
| *Bougainville's Reefs, | Ditto Ditto | 509 |
| *Bougainville's Strait, | Solomon Is. | 519 |
| *Bounty Is., | S. Pacific Ocean | 508 |
| Bourbon, I., | Indian Ocean | 523 |
| *Bouro I., | Moluccas | 416, 485 |
| Bourou, | Sumatra, N. | 42 |

| | | Page. |
|---|---|---|
| Bourne East, | England, S. | 536 |
| *Bouton Dome, | Pulo Bouton | 158 |
| *Bouton E. Point, | Bouton I. | 411 |
| *Bouton I., | Celebes, E. | 411 |
| *Bouton Pulo, | Malacca Strait | 158 |
| *Bouton S. Point, | Bouton I. | 410 |
| Bouton Strait, | Celebes, E. | 410 |
| Bowen Port | Ditto Ditto | 514 |
| Bowen's I., | New S. Wales | 502 |
| †Bowen's Shoal, | Bengal Bay | 23 |
| *Brala Pulo, | China Sea | 221 |
| Brandy Wine Bay, | Sumatra, W. | 63 |
| *Brasse Pulo, | Achen Road | 40 |
| Brazil Mount, | Azores | 529 |
| Breaksea Spit, | New S. Wales | 514 |
| †Brebes Point, | New Guinea, N. | 435 |
| †Brewer's Droogte, | Java Sea | 107 |
| Brewer's Strait, | Sumatra, E. | 144 |
| *Brill Shoal, | Celebes Sea | 405 |
| †Bringen Pulo, | Sumatra, W. | 66, 67 |
| Bristly Point, | Moluccas | 484 |
| Bristow Rock, | S. Pacific Ocean | 508 |
| Britain New, S. | Pacific Ocean | 515, 516 |
| Britannia's Bay, | Sapy Strait | 465 |
| British Channel, | England | 531 to 536 |
| †Britto's Bank, | China Sea | 230, 312 |
| Broadway, | Canton R. | 266 |
| *Broken Bay, | New S. Wales | 505 |
| Broken I., | Mindanao, S. | 378 |
| Broken Is, | Aracan R. | 5 |
| Brother N., | Andamans | 31 |
| Brother S., | Ditto | 31 |
| Brothers, | Canton R. | 274 |
| Brothers, | China Sea | 225, 227 |
| Brothers, | China, S. | 259 |
| Brothers, | Hainan | 249 |
| Brothers, | Malacca Strait | 182 |
| *Brothers, | Near Amoy | 303 |
| Brothers, | Sincapour Strait | 185 |
| Brouwer's Sand, | Sunda Strait | 99 |
| †Brouwer's Shoals, | Sumatra, E. | 110 |
| *Brown's Range, | N. Pacific Ocean | 522 |
| Brunswick Rock, | Canton River | 294 |
| †Buccleugh's Shoal, | Waygeeooe E. | 423 |
| †Buffalo I., | Cochin China | 244 |
| †Buffalo Point, | Sumatra, W. | 73 |
| *Buffalo Rocks, | Ava, W. | 9 |
| Buffalo Rock, | Sincapour Str. | 187, 188, 198 |
| Buffalo Rocks, | Sourabaya | 453 |
| Buffalo's Horn, | Waygeeooe, N. | 422 |
| Buffalo's Nose, | China, E. | 305 |
| Buga I., | Martaban R. | 17 |
| †Buglas I., | Philippines | 387 |
| †Bumkin's I., | Java, N. | 400, 450 |
| Bunder Green & Hill, | Chittagong R. | 3 |
| Bunwoot I., | Mindanao, S. | 380 |
| Buoy Rock, | Cochin China | 242 |
| Burias I., | Philippines | 345 |
| Buroo Pulo, | Achen Is. | 39 |
| †Burrong, | Sumatra, N. | 152 |
| Buruncan Point, | Mindora, W. | 390 |
| Busvagou I., | Calamianes | 393 |
| Button, | Borneo, W. | 351 |
| Button Hill, | Java, N. | 452 |
| Button I., | Tavay R. | 17 |
| Button Rock, | Borneo, S. | 365 |
| Button Rock, | Cochin China | 240 |
| †Button, | Sunda Strait | 99 |
| Buzzard's Bay, | New S. Wales | 514 |


## C.


| | | Page. |
|---|---|---|
| Cabbage Tree Point, | New S. Wales | 502 |
| *Cabossa I., | Bengal Bay | 18 |
| Cabra I., | Nicobars | 38 |
| Cachao, | Tonking R. | 247 |
| Cagayan C. | Luconia, N. | 326 |
| *Cagayanes Is., | Sooloo Sea | 387 |
| Cagayan Sooloo, | Ditto Ditto | 340 |
| Cahayaga I., | Philippines | 344 |
| *Cajeli Bay, | Bouro, N. | 416, 485 |
| Calabat Bay, | Banca, N. | 132 |
| †Calamianes Group, | Mindora Straits | 392 |
| †Calamianes Is., | China Sea | 393 |
| *Calansoesoe Harbour, | Bouton, E. | 412 |
| †Calantan, | Siam Gulf | 222 |
| †Calantigas, | Sumatra, E. | 141 |
| Calap I., | Moluccas | 425 |
| Calapan Road, | Mindora, N. | 345 |
| *Calavite I., | Mindora Straits | 392 |
| *Calavite P. & Mount, | Mindora I. | 394 |
| †Calayan I., | Babuyan Is. | 328 |
| Caldera, | Mindanao, S. | 384 |
| *Caledonia New, S. | Pacific Ocean | 518, 519 |
| Callam False Strait, | Malacca Strait | 172 |
| Callam Strait, | Malacca Strait | 169 |
| Caloeohij I., | Celebes Sea | 402 |
| Caluja I., | Sooloo Sea | 387 |
| †Calventura Rocks, | Ava, W. | 8 |
| Calves, | China, E. | 305 |
| Camara I. | Sapy Strait | 464 |
| *Cambing Pulo, | Timor Sea | 475 |
| Cambir Bay, | Cochin China | 243 |
| †Cambir Pulo, | Ditto Ditto | 243 |
| †Cambodia R. & Town, | Cambodia | 225, 226 |
| Cambuys Great, | Java, N. | 101 |
| Cambuys Little, | Ditto Ditto | 101, 102 |
| *Cambyna I., | Celebes, S. | 410 |
| †Camel I., | China Sea | 214 |
| †Camiguin I., | Babuyan Is. | 328 |
| Camiguin I., | Mindanao, N. | 342 |
| †Camorta I., | Nicobars | 36, 37 |
| †Campbell Port, | Andaman I. | 30 |
| *Campbell's I., | S. Pacific Ocean | 507 |
| Camp Cove, | Port Jackson | 508 |
| †Camraigne Bay, | Cochin China | 238 |
| Cana, | Ditto Ditto | 232 |
| †Cancao, | Siam Gulf | 224 |
| Candelamar I., | Balabac Straits | 339 |
| Candy Ca. | Celebes, N. | 370 |
| Canister Great, | Bengal Bay | 19 |
| Canister Little, | Ditto Ditto | 19, 20 |
| †Canister Western, | Ditto Ditto | 18 |
| *Canton Factories, | Canton City | 294 |
| Canton R., | China S. | 268, 290, 309, 313 |
| *Canton Pulo, | Cochin China | 245 |
| Cap & Feather, | Junkseylon | 25 |
| †Capas de Terre, | China Sea | 221 |
| Capas Laut, | Ditto Ditto | 221 |
| Capechong Pulo, | Sumatra, W. | 54 |
| Cap I., | Sumatra, W. | 47 |
| Cap-sing-moon, | China, S. | 274, 296 |
| Cap Small, | Sunda Strait | 99 |
| Cap, | Tavay R. | 17 |
| *Capones Is. & Point, | Luconia, W. | 322 |
| Cappel Pulo, | Banda Is. | 490 |
| Capul I., | Luconia, S. | 344 |
| Cara-cara Point, | Sumatra, W. | 54, 55 |
| Cara-cara Shoal, | Ditto Ditto | 55 |
| Caramanches, | Banca Strait | 120 |
| Caran Ca., | Malacca Strait | 169 to 172 |
| Carang Assem, | Bally I. | 458 |
| Carang Bram, | Banca Strait | 118 |
| Carang Hodjee, | Ditto Ditto | 119 |
| Carang Malan Dooyong, | Banca, N | 132 |
| Carang Malan Goonting, | Ditto | 132 |
| Carang Malan Toole, | Ditto Ditto | 132 |
| Carangua Pulo, | Sumatra, W. | 52 |
| †Cara Pulo, | Siam Gulf | 223 |
| Carapacho del Point, | Azores | 529 |
| Caravallos Point, | Luconia, N. | 326 |
| †Caravaos, | Mindora Sea | 389 |
| †Carawang Point, | Java, N. | 450 |
| *Carimata I., | Borneo, W. | 349, 356 |
| Carimata Inner Ch. | Ditto Ditto | 350 |
| Carimata Passage, | Billi. E. | 354, 359, 394 |
| *Carimon Java, | Java Sea | 400 |
| Carimon Great | Malacca Str. | 144, 183 |
| †Carimon Little, | Ditto Ditto | 144, 182 |
| *Carnicobar I., | Bengal Bay | 34 |
| Carolinas, | Pacific Ocean | 520, 522 |
| Carnom Pulo | Siam Gulf | 223 |
| Carnom Point, | Ditto Ditto | 223 |
| Carpenters, | Java Head | 96 |
| Carrang Assem, | Lombock, W. | 458 |
| Carrang Byang Byang, | Sumatra, W. | 72 |
| Carrang Ikan Chaby, | Ditto Ditto | 72 |
| Carrang Ikan Tando, | Ditto Ditto | 72 |
| Carrang Lampoo ang, | Ditto Ditto | 72 |
| Carrang Lebar, | Ditto Ditto | 72 |
| Carrang Pingan, | Ditto Ditto | 75 |
| Carrang Timbago, | Banca Strait | 115 |
| *Carteret's Harbour, | New Ireland | 516 |
| Casiguran Bay, | Luconia, E. | 346 |
| Caskets, | British Channel | 534 |
| Cassee I., | Sumatra, W. | 65 |
| Cassee Pulo, | Ditto Ditto | 63 |
| †Cassey Pulo, | Near Padang | 58 |
| Castelo de Point, | Azores | 531 |
| Casuaris Bay, | Sunda Strait | 95 |
| *Catanduanes I., | Luconia, E. | 345 |
| Catherina St., | Brazil | 507 |
| *Catherine's I., | Carolinas | 522 |
| *Catherine's Is., | Gillolo Passage | 419 |
| Cat I., | Mergui | 23 |
| *Cato's Bank, | S. Pacific Ocean | 509, 510 |
| †Catwick Great, | China Sea | 235 |
| Catwick Little, | Ditto Ditto | 234 |
| Cau I., | Cochin China | 243 |
| Cavalitian I., | Luconia, N. | 324 |
| Cavallo Pulo, | Manilla Bay | 314 |
| Cavallos I., | Japan, S. | 334 |
| Cavilli I., | Sooloo Sea | 387 |
| †Cavite, | Manilla Bay | 315 |
| †Cavnaian Point, | Luconia, N. | 326 |
| †Cawoor, | Sumatra, W. | 74 |
| Cayman Point, | Luconia, W. | 323 |
| †Caytene, | Sumatra, W. | 68 |
| Cedar Passage, | Achen Is. | 40 |
| Ceicer Highland, | Tsiompa | 232 |
| *Ceicer de Mer Pulo, | China Sea | 234, 312 |
| *Ceicer de Terre Pulo, | Ditto Ditto | 232, 312 |
| Celebes, E., | Molucca Passage | 397 |
| Celebes, N., | Moluccas | 375 |
| Celebes, S., | Salayer Straits | 405 |
| Celebes, W., | Macassar Strait | 366 |
| *Centinel, N., | Andaman Is. | 30 |

Page.

†Centinel, S., - - Ditto Ditto 30
*Ceram I., - - - Moluccas - 416, 487
Ceram Laut., - Timor Sea - - 488
Ceremata I., - - Ditto Ditto - 481
*Cerowa I., - - Ditto Ditto - 481
Ceylon I., - - Indian Ocean - 524
†Chamcollao, - - Cochin China - 245
Chamcollao False, Ditto Ditto 245
Chanctonbury Ring, England, S. - 535
Chang-cheun cham I., China, S. 264
Chang, R., - - China, E. - - 305
Channel Great, - Sunda Strait - 92
*Chapel I., - - China, E. - - 303
*Charlotte's Bank, China Sea - - 228
Chatham I., - - S. Pacific Ocean 508
†Chatham Port, - Andaman I. - 29
Cheduba I., & Town, Aracan - - 5, 6
Chee-lap-cock Point, Canton R. - 274
Cheneo Pnlo, - Sumatra, W. - 65
†Cheribon Mount. & Town, Java, N. 450, 451
Cherry I., - - - S. Pacific Ocean 521
Chichester Spire, England, S. - 535
Chi-chow, - - China, S. - - 272
China Buckeer, - Pegu - - - 12 to 16
China Hat, - - Sumatra, W. - 47
China Sea, - - China C. - - 200
*Chin-chew Bay, China, E. - - 304
Chin-chin Pulo, - Achen Is. - - 40
Chin-chin, R., - China, E. - - 304
Chin-chow, - - China, S. - - 259
Chin-hoy, - - - China, E. - - 308
China C., - - - China Sea - - 260
Chitram, - - - Tsiompa - - - 230
†Chittagong R. & C. Bengal Bay - 1, 3
Chook-chow, - China, S. - 276, 283
Choo-keang, - - Ditto Ditto - 290
Chouvay Ca., - Cochin China - 246
†Chowry, - - - Nicobars - - 35
*Chueng-chow, - China South - 297
†Chuen-pee, - - Canton R. - - 289
Chuen-poon-chow, China, S. - - 299
Chung-chow, - Canton R. - - 271
*Chung-chow, - China, S. - 278, 286
*Church Rocks, - Ava, W. - - 8
*Chusan, - - - China, E. - - 306
*Chusan Is., - - Ditto Ditto - 305
†Cin Point, - - Siam Gulf - - 223
Circular Head, Van Diemen's Land 497
Circular Shoal, - Malacca Road - 176
*Cirencester's Sand Banks, Billiton, E. 358
*Cirencester's Shoal, Ditto Ditto 357
†Clara Great, - - Bengal Bay - - 22
Clara Little, - - Ditto Ditto - 22
Clarence Point, Van Diemen's Land 498
*Clapps I., - - Sumatra, W. - 79
†Clark's I., - - - Bass' Strait - 500
*Claro Babuyan, China Sea - - 328
Clear Ca., - - Ireland - - 531, 532
Cleft Hill, - - Sumatra, W. - 47
Clements Strait, Billiton I. - 125, 133
Cleughs Reef, - Andaman's, N. 28
Cliff, I., - - - Ditto Ditto 28
Clove, Is., - - Moluccas - - 490
Cobra, I., - - Malacca Strait - 183
Cochin China, - China Sea - 237, 311
Cocoanut I., - - Sumatra, W. - 47
*Cocoanut I., - - New Ireland - 516
*Cocoanut Point, Gillolo, S. - - 418
Cocoanut Point, Sumatra, S. - - 91

Page.

Cocob Pulo, - - Malacca Strait 182, 198
*Coco Great I., - Andaman, N. - 27
Coco Pulo, - - Junkseylon - - 25
†Coco Little I., - Andaman, N. - 27
*Cocos Is., - - - Sumatra, W. - 77
*Codocopuei I., - N. Pacific Ocean 438
Coffin Ca, - - Celebes, N. - - 376
Coffin Hill, - - Java, N. - - - 452
†Collao-hanne, - Cochin China - 246
Colliers Rock, - Sunda Strait - 91
Co-Long-sou I., China, S. - - 304
Col. Paterson's I., New Caledonia 518
Combado I., - - Token Besseys - 413
*Comba Pulo, - - Ombay, N. - - 473
†Comodo I,, - - Sapy Strait 463, 466
*Concordia Fort, - Timor I. - - - 479
*Condore Pulo, - China Sea - - 226
Condore Little, - Ditto Ditto - 227
Condul I., - - Nicobars - - 38
Coney I., - - - Malacca Strait 186, 198
Conical Mountain, Cochin China - 242
*Copang Bay, - Timor I. - - 478, 479
Cork, - - - - Ireland - - - 532
*Cornwallis Fort, Prince of Wales I. 159
*Cornwallis I., - Carolinas - - 522
†Cornwallis Port, Andaman Great 28
†Coron I., - - - Mindora Straits 393
Corooman Is., - Borneo, N. - - 347
Corregidor I., - Manilla Bay - 314
Corrientes C., - Africa, E. - - 525
Corror I., - - - Pellew Is. - - 439
*Corvo I., - - - Azores - - - 529
*Cou-cock I., - - China, S. - - 265
†Cou-mong Harbour, Cochin China 243
Courtay, - - - Sumatra, N. - 153
Cow and Calf, - Bengal Bay - 26
Cow-chow, - - China, S. - - 286
Cow-ee-chow, China, S. - - 279
Cow I., - - - Tsiompa - - - 230
Cow-loon, - - China, S. - - 296
Cow-ou Point, - Macao Road 266, 284
Crab I., - - - Cambodia - - 226
Craggy I., - - Bass' Strait - - 500
*Creseent Chain, China Sea - - 253
*Crockatoa, - - Sunda Strait - 92, 93
Crocodile Rock, Bass' Strait - - 500
Crompa Is., - - Celebes Sea - 468
†Crooe, - - - - Sumatra, W. - 75
Cruzcool, - - - Chittagong - - 1
Cua-be, - - - Cochin China - 240
Cua-lop R., - - Tsiompa - - 230
Cuckolds Point, Chittagong - - 2
†Cuddalore Ca., - N. Poggy I. - 84
Cumberland Is., New South Wales 514
*Cumbrian's Reef, China Sea - - 331
Cnp-shee Bay, - China, S. - - 302
Current I., - - Celebes, E. - - 398
*Cnrrent I., - - N. Pacific Ocean 438
†Cuyo Grand, - Mindora Sea - 389
Cuyos Is., - - Ditto Ditto - 389

D.

Da-bia, - - - Cochin China - 241
Dalawan Bay, - Balabac I., - - 338
Dalla R., - - - Ava, S. - - - 12
*Dalrymple Port, Van Diemen's Land 497
Dalupiri I., - - Luconia, E. - 344
†Damme I., - - Timor Sea - - 481

Page.

Dammer Pulo, - Moluccas - - 418
Dampiers Passage, New Britain - 517
Damp. St. Battant I., 416, 424, 426, 446
Danes I., - - - Canton R. - - 294
Dangerous Pointed Ro. Ditto Ditto 291
Danger Point, - New South Wales 508
Dapour Pulo, - Java, N. - - - 102
*Darnleys I., - - Torres Strait 510, 511
Dasee Strait, - Lingin, S - - 138
Date I., - - - Cochin China - 243
†Dattoo Pulo, - - China Sea 213, 349
*Davey Port, Van Diemen's Land 494
*David's St. Is., - Pacific Ocean - 436
Davilican Bay, - Luconia, E. - 346
Deception I., - Pitt's Passage - 425
Deep Bay, - - Sumatra, N. - 151
Deepwater Point, Callam Strait - 171
Deepwater Point, China, S. - - 260
Deer I., - - - China, E. - - 306
*Defence Fort, - Bouro Bay - - 485
Delian I., - - Calamianes - - 333
Deliverance Is., S Pacific Ocean 519
Delly R., - - - Sumatra, N. - 154
Denneloang R., Celebes, S. - - 476
D'Entreeasteaux's Ch. Van Die. Land 495
D'Entreeasteaux's Strait, Ditto Ditto 495
Deptford Rock, Bally Strait - - 457
Derwent R., Van Diemen's Land 496
Devils Rock, - Solor Strait - - 473
Dgiay Bay, - - Cochin China - 239
*Diamond I., - - Ava, S. - - - 6, 10
*Diamond Point, - Sumatra, N. - 153
Diana Shoal, - China Sea - - 215
*Dianas Bank, S. Pacific Ocean 509, 510
Didicas Rocks, - Luconia, N. - 329
†Diligent Strait, Andaman, E. - 29
*Dilly, - - - - Timor, N. - - 476
†Dinding Pulo, - Malacca Strait 162, 200
Dipoolool Is., - Sooloo Sea - - 384
*Direction I., - - China Sea - - 212
†Direction Mount, Va. Diemen's Land 496
*Discovery's Eastern Bank, Billiton, E. 358
*Discovery's Reef, Ditto Ditto 358
*Discovery's Reef, China Sea - - 317
Discovery Rock, Macclesfield Strait 127
*Discovery Shoal, China Sea - - 253
*Discovery's Western Bank, Billit. E. 358
Diviran I., - - Calamianes - - 393
Doa Pulo, - - Sumatra, W. - 53
Docan Pulo, - - Banca, N. - - 134
Doddington Rock, Africa, S. - 524, 525
*Dogger Banks, - China Sea - 138, 313
*Dog I., - - - Timor Sea - - 475
Doif I., - - - Gillolo Passage 420
Doi-Moi I., - - Cochin China - 240
Dolphin Rock, - Sumatra, E - - 109
Dolphin's Nose, Mergui - - - 23
†Dolphin's Nose, Moluccas - - 490
*Domar Pulo, - China Sea 134, 214
*Dombuck Paint, Aracan - - - 4
†Domea R., - - Tonking Gulf - 247
†Domel I., - - - Bengal Bay - - 22
†Dominos, - - - China Sea - - 137
*Donda Ca., - - Celebes, W. - 369
*Dondrekin I., - Borneo, E. - - 373
†Dongan Point, - Mindora, W. - 393
Dory Harbour, - New Guinea, N. 435
Double I., - - Borneo, W. - - 350
†Double I., - - Torres Strait 511, 513

Page.

Double Sandy Point, Va. Diem. La. 506
Dover, - - - England, S. - 536
Downs, - - - Ditto Ditto - 536
*Dromedary Ca & Mt. New S. Wales 501
†Drowned I., - - Ava, S. - - - 10
*Drummond's I., - China Sea - - 253
Dryon Great, - Sumatra, E. - 142
Dryon Little, - Ditto Ditto - 142
*Dryon Strait, - - Ditto Ditto - 140
Dry Rock, - - Canton River - 290
*Dry Sand Bank, Macassar Strait 366
†Dry Sand Bank, Ditto Ditto 373
*Dry Sand Bank, Panay, W. - - 388
Dua Pulo, - - Sumatra, W. - 60
†Duffer I., - - - Flores, N. - - 470
Duke of York's I., New Britain - 516
Dumalan, - - Mindanao, S. - 384
*Duncan's Passage, Andamans - - 31
Dungeness, - - England, S. 534 to 536
Dunnose, - - - Isle of Wight - 535
Duo Bolod, - - Sooloo Sea 341, 385
Duo Pulo. - - Sumatra, W. - 50
*Durands Reef, - S. Pacific Ocean 521
Durian False, - Sumatra, E. - 142
Durian Point, - Sumatra, W. 55, 56
Durrstede Fort, - Moluccas - - 490
Dutch Bay, - - Amboina, I. - 489
Dutch Channel, - Batavia Road - 102
Dutch Gut, - - Solor Strait 472, 473
Dwaal Bay, - - Bouton, E. - - 411
*Dwaalder I., - - Borneo, S. - - 364

E.

†East & W. Chan. MalaccaStrait 166, 199
East Bourne, - England, S. - 536
Eastern Bank, - Malacca Strait 168
†Eastern Bank, - Romania Reef - 193
Eastern Channels Batavia Road - 104
*Eastern Fields, - Torres Strait - 510
Eastern Grove, - Pegu R. - - - 14
Eastern I., - - Engano Road - 86
Eastern Reef, - Batavia Road 102, 103
East I., - - - Alloo Strait - - 474
East I., - - - Borneo, W. - 351
East I., - - - Andaman Great 28
East I., - - - Moluccas - - 485
*East I., - - - Natunas - - - 216
*East London Reef, China Sea - - 317
†Edam I., - - - Batavia Road 102, 106
Edam I., - - - Malacca Strait - 157
Eddystone, - - British Channel 533
*Eddystone, Van Diemen's Land 495
Eee-chow, - - China, S. - - 281
Eee-moon, - - Ditto Ditto - 281
Een I., - - - Moluccas - - 421
†Efbe I., & Harbour, Ditto - - - 425
*Ejow Peak, - - Sumatra, S. - 91
Elephant I., - - China, E. - - 306
Elephant Mountain, Sumatra, N. 152
Elephant Mountain, Tonking R. - 247
†Elephant Mount, Queda - - - 156
*Elephant, - - - Pegu R. - - - 12
*Elephant Point, - Aracan - - - 4
Elliot Mount, - New South Wales 505
Elphinston's Bay, Celebes, E. - - 398
Ely Pulo, - - - Sumatra, W. - 54
Embocadero, - Luconia, S. - 343
Endeavour R., - New South Wales 514

Page.

Endeavour Strait, Torres Strait 513, 515
*Engano Ca, - - Luconia, N. - 327
*Engano I., - - Indian Ocean - 86
England Pulo, - Gillolo, E, - - 419
English Cove, - New Ireland - 516
Enkhuysen I., - Batavia Road 102, 104
*Enkhuyzer Sand, Billiton, E. - - 358
Ental Point, - - Pegu R. - - - 14
*Entrance Point, - Banca, E. - - 125
Empervier, - - Cochin China - 242
†Erakong I., & Harbour, Pellew Is. 439
Ernest Mount, Torres Strait 511, 513
*Erronan I., - - New Hebrides - 521
*Espiritu Santa - Samar, E. - - 344
*Espirit St. Is., - China Sea - - 213
*Espirit St. Shoal, Ditto Ditto - - 255
Estam Pulo, - Java, N. - - - 106
†Europe Shoal, - China Sea - - 213
*Eye I., - - - Gillolo, E. - - 421

F.

Fabian St. R., - Luconia, W. - 324
Fai-fo R., - - Cochin China - 245
Fair Chan. Bank, MalaccaStrait 180, 199
*Fairlie Rock, - Java Sea - - 125
Fakeers Tree, - Chittagong R. - 3
Fakiers - - - Aracan R. - - 5
Falkland Is., - Southern Ocean 507
Falmouth's Bank, Mindora Sea - 389
False China Buckeer, Pegu - - 16
False First Point, Banca Strait - 115
False River, - - Sumatra, E. 118, 120
False Second Point, Banca Strait - 115
Fan-lo-kong, - - China, S. - - 301
Fan-shee-ak I., Canton R. - - 287
*Fayal I., - - - Azores - - - 529
Feejee Is., S. Pacific Ocean 518, 521
*Felix Ca., - - Sumatra, W. - 48
Fenny R., - - Chittagong - - 4
Feou-kieou, - - Hainan - - - 251
*Ferraria Point, - Azores - - - 530
Firando Port, - Japan Is. - - 335
First Bar, - - Canton R. - - 294
*First Point, - - Banca Strait - 115
First Point, - - Java, W. - - 96
First Reach, - - Callam Strait - 171
Fisherman's I., - China, S. - - 299
Fisher's I., - - China Sea - - 333
†Fisher's Is., - - Cochin China - 240
Fisher's I., - - Dampier's Strait 425
Fisher's I., - - Malacca Strait - 176
Fisher's I., - - Tonking Gulf - 247
*Five Fathoms Bank, Celebes Sea - 404
†Five Fathoms Bank, New Guinea, N 436
Five Fathoms Bank, Sumatra, E - 108
Five Is., - - - China, S. - - 263
†Five Is., - - - Andaman Great 31
*Flat I., - - - Andaman Great 30
Flat I., - - - Cheduba - - 7
Flat I, - - - Mergui - - - 23
Flat I., - - - Mindanao, S. - 378
*Flat I., - - - Natunas - - - 216
Flat Is., - - - Alloo Strait - 474
†Flat Is., - - - Sumatra, W. - 77
*Flat I., - - - Sumbawa, N. - 449
†Flat Point, - - Borneo, S. - - 355
*Flat Point, - - Ceram, N. - - 487
*Flat Point, - - New Guinea, N. 435

Page.

*Flat Point, - - Sumatra, S. - - 76
*Flat Rock, - - Bengal Bay - - 32
Flats, - - - - Canton R, - - 267
Flattery Ca., - New South Wales 514
Flinders Group, Ditto Ditto 514
*Flores Head, - Flores I., - - 470
*Flores I, - - - N. Atlantic Ocean 528
*Flores I., - - - Timor Sea - 467, 470
*Flores Strait, - Ditto Ditto 470, 471
Fluted Ca., Van Diemen's Land 496
*Fokai Point, - - China, S. - 299, 300
Folkstone, - - England, S. - - 536
Foon-ky-chy I., China, S. - - 258
Foo-to-san I., - China, E. - - 306
Foreland Lights, England, S. - - 536
*Formigas Rocks, Azores - - - 531
Formosa Bank, - Malacca Strait - 179
Formosa Banks, China Sea - - 333
*Formosa I., - - Ditto Ditto - 332
*Formosa Mt. & R Malacca Strait - 179
Fortune I., - - Luconia, W. - 314
†Fortune I. Little, Sumatra, S. - - 75
Fotow-moon, - China S. - - - 295
†Foul I., - - - Ava, W. - - - 7
Foul I, - - - Dampier's Strait 427
Foun-kay, - - China, S. - - 303
*Four Brothers, - Java Sea - - 454
Four Brothers, - Malacca - - - 179
†Fourth Point, - Banca Strait - 117
Fourth Point, - Sunda Strait - 98
†Fow I., - - - Gillolo Passage 420
Fraile I., - - - Manilla Bay - 314
Frailes Rocks, - Azores - - 529, 530
Frederic Hendric, Banca Strait - 119
Fred. Hen. Bay, Van Diemen's Land 496
Fred. Henry Ca., Ditto Ditto 496
French I., - - Canton R. - - 294
†French White Ro China Sea - - 214
Freshwater Bay, Isle of Wight - 535
Freshwater Bay, Borneo, W. - 350
Friars Hood, - Ceram, N. - - 487
†Friar, - - - - Java Head - - 96
Friendly Is., S. Pacific Ocean 518, 521
*Friendship Shoal, China Sea - - 319
Fu-chew, - - - China, E. - - 305
†Fuga I., - - - China Sea - - 327
*Furneaux's Is., - Bass' Strait - - 500

G.

*Gada del Point, - Azores - - - 529
Gagneray R., - Tsiompa - - - 229
†Gagy I., - - Gillolo, E. - - 420
Gain-ba Point, - Cochin China - 242
Galera Point, - Mindanao, W. - 387
Galion I., - - Java Sea - - 454
Gallatt Pulo - - Rhio Strait - - 139
*Galong Bay, - - Hainan - - - 249
Galowa Strait, - New Guinea, W. 433
Gamen I., - - Dampier's Strait 426
Gap I., - - - Calamianes - - 393
Gap of Bigan, - Luconia, W. - 324
Gap of Padaran, Padaran Ca. - 232
Gap of Solomague, Luconia, W. - 325
Gap Rock, - - China, S. - 275, 276
Gap Rock, - - Sunda Strait, - 94
*Gaspar I., - - Gaspar Straits - 128
*Gaspar Rico I., - Carolinas - - 522
Gaspar Straits, - Banca, E. - 125, 394

| | | Page. |
|---|---|---|
| *Gasses Pulo, | Gillolo Passage | 417 |
| Gasses Strait, | Ditto Ditto | 418 |
| Gaya Pulo, | Borneo, W. | 347 |
| *Geby I., | Gillolo Pas. | 417, 420 |
| Geefoo I., | Canton R. | 291 |
| Geelvink's Bay, | New Guinea, N. | 435 |
| Geelvink's Point, | Ditto Ditto | 436 |
| George's I., | St. Helena | 527 |
| *George St. Ca. | New S. Wales | 501 |
| George's St. Ch. | Nicobar Is. | 38 |
| George St. Ch. | England, W. | 531 |
| *George St. Ch. & Ca. | New Ireland | 515 |
| *George St. I., | Azores | 529 |
| *George Town, | Prince of Wales I. | 159 |
| Georgia, S. | Southern Ocean | 507 |
| Gerftsius Is., | Moluccas | 484 |
| Gilboang I., | Bally Strait | 457 |
| Gillibanta I., | Sapy Strait | 463 |
| Gillolo, E. | Gillolo Passage | 419 |
| *Gillolo I., | Moluccas 381, 418, 483 to | 485 |
| Gillolo Passage, | Ditto 416, 421, | 446 |
| Ginetes de Pico. | Azores | 531 |
| Gingham, | Sumatra, N. | 152 |
| Glass Houses | New S. Wales | 508 |
| Goat I., | Bashees | 330 |
| *Goat I., | Luconia, W. | 322 |
| Goat's Is., | Azores 529, | 530 |
| Goeve Great, | Amoy Har. 303, | 304 |
| Goeve Little, | Ditto Ditto | 304 |
| *Golden Mountain, | Sumatra, N. 42, | 151 |
| Golonasy, | Gillolo, E. | 419 |
| Gomez Pulo, | Achen Head 40, | 41 |
| *Gomona I., | Moluccas | 416 |
| Good Hope Ca. | Africa, S. | 526 |
| †Good Hope Ca. | China, S. | 303 |
| *Good Hope Ca. | New Guinea, N. | 435 |
| Goodwin Sand, | England, S. | 536 |
| Goonong Apee, | Banda Is. | 490 |
| *Goonong Apee, | Sapy Strait | 464 |
| *Goonong Apy, | Banda Sea | 491 |
| Goonong Gaja, | Java, N. | 451 |
| Goonong Ikan Point, | Bally | 457 |
| Goonong Laoo, | Java, N. | 100 |
| Goonong Ledang, | Malacca | 178 |
| Goonong Malaloo, | Banca, N. | 132 |
| *Goonong Maraas, | Banca | 131 |
| †Goonong Myang, | Borneo, W. | 351 |
| Goonong Ratoos, | Borneo, S. | 364 |
| *Goonong Tella R., | Celebes, E. | 397 |
| Gooty, | Borneo, E 362, | 373 |
| †Gorda Point, | Mindanao, W. | 387 |
| Gordon R., | Van Diemen's La. | 494 |
| *Goito Is. & Ca. | Japan Is. | 334 |
| *Governor Duncan's Is., | China Sea | 253 |
| Governor King's I., | New Caledonia | 518 |
| Gowenen I., | Baseelan S. | 386 |
| Gower's Harbour, | New Ireland | 516 |
| Gow-tow-chow, | Canton R. | 271 |
| Gow-tow-pyah, | China, S. 296, | 297 |
| *Gozam I., | Banda Sea | 488 |
| *Graciosa I., | Azores | 528 |
| Grafton Ca. | New S. Wales | 514 |
| †Grafton I., | Bashees | 330 |
| Great Channel, | Sunda Strait | 92 |
| Great I., | Bass' Strait | 500 |
| Great Plain, | Cochin China | 239 |
| Great S. Eastern Reefs, | Torres Str. | 511 |
| Great Southern Arm, | Port Jackson | 503 |
| Green Ca. | New S. Wales | 501 |
| *Green I., | Calamianes | 392 |
| Green Hill | Canton R. | 267 |
| *Green I., | China Sea | 213 |
| Green I., | Engano Bay | 86 |
| Green I., | S Pacific Ocean | 508 |
| Green I., | Pantar N. | 474 |
| Green I., | Philippines | 346 |
| Green I., | Van Diemen's La. | 498 |
| Greenland, | England, S. | 535 |
| Green Point, | China, S. | 262 |
| Greenwood I., | Celebes Sea | 410 |
| Greig's Channel, | Borneo, W. | 350 |
| †Greig's Shoal, | Ditto Ditto | 356 |
| *Greyhound's Straits, | Moluccas | 415 |
| Griffin Rocks, | Sooloo Sea | 382 |
| *Grim Ca., Van Diemen's La. | 494, | 497 |
| Grisnez Ca. | France, N. | 535 |
| Grisse, | Java, E. | 452 |
| Grosvenor's Bank, | Pitt's Passage | 424 |
| Guardhouse I., | China, E. | 307 |
| *Guahan I., | Marian Is. | 442 |
| Guernsey I., British Channel | 534, | 535 |
| †Guilder Rock, | Malacca Strait | 156 |
| Guimaras I., | Philippines | 388 |
| Guinapac Rocks, | Luconia, N. | 329 |
| Guinea, | Africa, W. | 528 |
| Gum Guma, | Sumatra, N. | 152 |

## H.

| | | |
|---|---|---|
| Haerlem I., | Batavia Road 102, | 104 |
| *Hai-ling-shan, | China, S. | 259 |
| *Haihan Head, | Hainau I. | 251 |
| Hainan I., | China Sea 247, | 248 |
| †Halfmoon Shoal, | Bengal Bay | 22 |
| *Halfmoon Shoal, | China Sea | 319 |
| *Halfway I., | Torres Strait | 511 |
| *Hammond's I., | Torres Strait | 512 |
| Hand Deep Bank, | British Channel | 533 |
| Happoix R. & Pt., | Cochin China | 245 |
| Haraucka I., | Moluccas | 490 |
| Harbinger's Reefs, | Bass' Strait | 499 |
| Harbour I., | Palawan | 320 |
| Hardy's Is., | New S. Wales 512, | 514 |
| *Harlem Bay, | China, S. | 299 |
| Hart I., | Bally, N. | 457 |
| *Hasting's I., | Celebes Sea | 456 |
| Hat Hill, | Java, E. | 452 |
| Hau I., | Cochin China | 243 |
| Hau-kay Pagoda, | China, S. | 303 |
| *Haw-chieun, | China, S. | 262 |
| Hawkesbury R., | New S. Wales | 506 |
| *Haycock I., | Calamianes | 392 |
| *Haycock I., | Natunas | 215 |
| *Haycock I., | Pantar Strait | 474 |
| *Haycock I., | Xullas | 415 |
| Haycock Mount, | Malacca Strait | 156 |
| Haycock Rock, | Waygeeooe, N. | 422 |
| *Haycock S., | Natunas | 216 |
| Hebes Reef, | Bass' Strait | 498 |
| Hebrides New, | S. Pacific Oc. 518, | 520 |
| *Hegadis I., | Celebes Sea | 410 |
| Helena St. I., | S. Atlantic Ocean | 527 |
| *Helen's Shoal, | N. Pacific Ocean | 437 |
| Helen's St. Road, | England, S. | 535 |
| *Hen and Chickens, | Celebes Sea | 402 |
| Herman, | Nicobars | 36 |
| Hervey's Bay, | New S. Wales 508, | 514 |
| †Heysen Is., | China, E. | 305 |
| Hie-che-tchin Bay, | China, S. | 302 |
| High Down Windmill, | England, S. | 535 |
| †High I., | China Sea | 333 |
| High I., | Pantar Strait | 474 |
| *High Point, | Calamianes | 392 |
| High Pyramidal Rock, | Sooloo Sea | 384 |
| Hindostan Rock, | Sunda Strait 94, | 124 |
| Hoa-ock-chow, | China, S. | 276 |
| *Hoa-pin-su I., | China Sea | 333 |
| Hobart's Town, | Van Diemen's La. | 496 |
| *Hog I., | Bengal Bay | 77 |
| Hog I., | Java Sea | 454 |
| Hog I., | Salayer, W. | 408 |
| *Hog Point, | Sumatra, S. | 91 |
| †Holland's Bank, | China Sea 233, | 312 |
| Hom-co I., | Cochin China | 244 |
| Hom-cone I., | Ditto Ditto | 244 |
| Hone Cohe Bay, | Ditto Ditto | 240 |
| †Hone Ngoai, | Ditto Ditto | 239 |
| †Hone Noi, | Ditto Ditto | 239 |
| *Hong-Kong I., | China S., 279, | 295 |
| Hong-hai I. & Bay, | Ditto | 301 |
| Hong-shan R., | Canton, R. | 267 |
| Honimoa I., | Moluccas | 490 |
| Honne Gomme Bay, | Cochin China | 241 |
| Hoogermeer Shoal, | Java N. | 451 |
| Hoorn I., | Batavia Road, 104, | 106 |
| Hoorn Is., | Java, N. | 101 |
| Hoo-tow-mun, | China, S. | 290 |
| Hopewell I., | Java Sea | 455 |
| Horn Ca. | Terra del Fuego | 507 |
| Horned Hill, | New S. Wales | 513 |
| Horse of Willington, | British Chan. | 536 |
| †Hound's Is., | Sumatra, S. | 91 |
| Hout's I., | Ditto Ditto 92, | 124 |
| *How Ca., | New S. Wales | 501 |
| Hoya Point, | Ceram, S. | 487 |
| †Hue R. & City, | Cochin China | 246 |
| Hump I., | Dampier's Strait | 426 |
| †Hunter Port, | New Ireland | 516 |
| *Hunter's Is., | Bass' Strait 497, | 499 |
| *Hunter's Is., | Pacific Ocean 520, | 522 |
| Hurlock's Bay, | Sumatra, W. | 83 |

## I.

| | | |
|---|---|---|
| *I-chow | China, S. | 277 |
| Ilara Hummock, | Luconia, W. | 325 |
| †Ilchester Shoals, | Lingin Bay 136, | 313 |
| Ililin, | Mindora, W. | 393 |
| Illy Pulo, | Sumatra, W. | 54 |
| *Indefatigable's Route, | Torres Strait | 512 |
| *Indispensible Strait, | Solomon Is. | 519 |
| *Indramayo Point, | Java, N. | 450 |
| *Indrapour Point & R., | Sumatra, W. | 67 |
| Inland Bay, | Java, S. | 88 |
| Inner Channel, | Batavia Road | 102 |
| Inner Channel, | Point Romania | 191 |
| Inner Channel, | Pulo Laut | 365 |
| Inner Channel, | Pulo Timoan | 219 |
| Inner Harbour, | Amboina | 489 |
| Inner Head, | Port Jackson | 502 |
| Inner Route, | Torres Strait | 514 |
| †Interview I., | Andaman, W. | 30 |
| *Investigator's Shoal, | China Sea | 318 |
| †Invisible Bank, | Bengal Bay | 32 |
| Ipoe, | Sumatra, W. | 68 |
| Iron I., | Bengal Bay | 19 |
| *Islamabad, | Chittagong | 4 |
| Ivanna Bay, | Bashee Is. | 330 |

J.

| | | Page. |
|---|---|---|
| †Jacinto St. Port, | Philippines | 344 |
| *Jackee Pulo, | Timor, E. | 480 |
| *Jackson Port, | New S. Wales | 502,520 |
| Jackson's I., | Pitt's Strait | 431, 432 |
| Jackson's Ledge, | Andaman, N. | 28 |
| *Jaggers Reef, | Flores, N. | 469 |
| Jambee R., | Sumatra, E | 141 |
| Jambo Pulo, | Sumatra, W. | 56 |
| *James St. Ca. | Tsiompa | 229 |
| Japanese Channel, | Cambodia R, | 226 |
| *Japan Is., | Japan Sea | 334 |
| Japara, | Java, N. | 452 |
| *Jarra Pulo, | Malacca Strait | 163 |
| Jarra Pulo, | China Sea | 213 |
| Jason Rock, | Sunda Strait | 109 |
| Java Head, | Sunda Strait | 88, 89 |
| Java N., | Java I. | 86, 450 |
| Java Sea, | Java, N. | 363 |
| Jawana, | Ditto Ditto | 452 |
| *Jehanghire's Bank, | China Sea | 253 |
| Jerajah Pulo, | Prince of Wales I | 160 |
| Jersey I., | British Channel | 534 535 |
| *Jervis Bay, | New S. Wales | 502 |
| Jobie I., | New Guinea, N. | 436 |
| *John Heneker's Point, | Moluccas | 484 |
| John Peck's I., | China, E. | 307 |
| *John St. False, | China, S. | 262 |
| John St I., | China S. | 264 |
| John St I., | Sincapour Strait | 186, 188 |
| †John's St. I., | Mindanao E | 380 |
| Johore False Hill, | Sincapour Strait | 189 |
| Johore Hill & Point, | Ditto Ditto | 190 |
| Johore Shoal, | Ditto Ditto | 189, 198 |
| Johore S. Cape, | Ditto Ditto | 189 |
| Judge & Judges, | Clerk S. Pacific Oc. | 507 |
| *Julian St. I., | China Sea | 214 |
| Julkuddar Fort, | Chittagong | 2 |
| Junk R., | Canton R. | 294 |
| *Junkseylon I., | Bengal Bay | 25, 156 |
| †Juthia, | Siam R. | 223 |
| Jyoi I., | Gillolo Passage | 420 |

K.

| | | |
|---|---|---|
| Kabingaan I., | Sooloo Sea | 341 |
| *Kabruang I., | Mindanao, S. | 378 |
| Kai-kong I., | Macao Road | 284 |
| *Kalatoa I., | Celebes Sea | 468 |
| *Kalkoon Is., | Java Sea | 401, 456 |
| Kaly Pulo, | Java, N. | 100 |
| Kamaiadan Bay, | Mindanao, S. | 380 |
| †Kanary Is., | Moluccas | 425 |
| *Kangelang I., | Java Sea | 401, 454 |
| *Kanneeoongan Point, | Borneo, E. | 373 |
| Kaow I., | Macao Road | 284 |
| Karakita Is., | Mindanao, S. | 377 |
| †Karkalang I., | Ditto Ditto | 379 |
| *Katchall I., | Nicobars | 35 |
| *Kayo I., | Moluccas | 483, 484 |
| Kays Pulo, | Sumatra, W. | 50 |
| Keemanees Point, | Borneo, W. | 347 |
| *Keeney Balloo, | Borneo | 337 |
| Kee-ow Point, | Canton R. | 287 |
| Kee-to Point, | China, E. | 306 |
| †Ke-ga Point, | Tsiompa | 231 |
| Kehan-shee-ak, | Canton R. | 267 |
| *Kekik I., | Gillolo Passage | 418 |
| Kelang I., | Moluccas | 487 |
| Kelumbo Pulo, | Lingin Road | 137 |
| *Kema Village & Road, | Celebes, E. | 375 |
| *Kendrick's I., | Pacific Ocean | 443 |
| Kentlaw R. | Chittagong | 2 |
| Kent's Groups, | Bass' Strait | 500 |
| Kent Rock, | Malacca Strait | 185 |
| *Kessing I. & East Point, | Ceram, E. | 487 |
| Ketchepee, | Gillolo Passage | 420 |
| Keyser's Bay & I., | Sumatra, S. | 76, 89 |
| Key's Is., | New Guinea, W. | 481, 488 |
| Khaut Colley R., | Chittagong | 2 |
| †Khee-seak I. & City, | China, S. | 302 |
| Kiang R., | China, E. | 308 |
| Kiery I., | Moluccas | 483 |
| Kilzang Harbour, | Sumatra, S. | 90 |
| King's I. & Bay, | Mergui | 19 |
| King's I., | Bass' Strait | 499 |
| Kingsmore Shoal, | British Channel | 535 |
| King William's I., | Dampier's Strait | 426 |
| Kin-ngao Points, | China, S. | 302 |
| *Kinsui I., | Japan Is., | 334 |
| Kio Flat, | Malacca Strait | 161 |
| Kiong-chew-fu, | Hainan, N. | 251 |
| Kio Pulo, | Malacca Strait | 161 |
| Kio Pulo, | Sumatra, W. | 48 |
| Ki-san-seu, | China, E. | 308 |
| *Kissér I., | Timor Sea | 475 |
| Klobat Mount, | Celebes, E. | 375 |
| Koan High Land, | China, S. | 260 |
| Ko ho I., | Ditto Ditto | 266, 284 |
| Koilly, | Celebes, W. | 369 |
| Kossoll Reef, | Pellew Is. | 440 |
| Kraw Isthmus, | Siam, S | 24 |
| Krusenstern's Rock, | N. Pacific Oc. | 522 |
| *Kumi I., | Japan Sea | 333 |
| †Kuttupdeah I., | Chittagong | 1, 2 |
| Kuyper's I, | Batavia Road | 103, 104 |
| *Kvangle I., | Pellew Is. | 440 |
| Kyl Point, | Celebes | 369 |
| *Ky-poong, | China, S. | 275 |

L.

| | | |
|---|---|---|
| †Labanacky, | Sumatra, W. | 49 |
| Laboang Dapper, | Pulo, Banca Strait | 112 |
| †Labon Point, | Sumatra, W. | 49 |
| Labooan I., | Borneo, W. | 347 |
| Labyrinth Is., | Andaman Great | 30 |
| †Lacotta Pulo, | Sumatra, W. | 52 |
| Lacrone Pulo, | Ditto Ditto | 64 |
| *Ladda Is. & Peak, | Malacca Str. | 156, 157 |
| *Ladrone Grand, | China, S. | 268 |
| Ladrone Little, | Ditto Ditto | 269 |
| *Laers Bank, | Celebes Sea | 402 |
| *Laff-samme Is., | China, S. | 272 |
| †Lagan Point, | Tsiompa | 231 |
| Lagoon Beach, | Port Dalrymple | 498 |
| Lagoondy Pulo, | Sunda Strait | 90 |
| †Lagootsong Shoal, | Sumatra, W. | 49 |
| Lagnan I. & Town, | Samar, N | 344 |
| Lahoo Bay, | Ceram, S. | 487 |
| La Hogue Ca. | France N. | 534 |
| †Lalan Is., | Junkseylon I. | 25 |
| Lalary Point, | Banca, W. | 115 |
| *Lamay I., | Formosa, W. | 332 |
| *Lamma I., | China, S. | 278 |
| *Lam-ock Is., | China, S. | 303 |
| Lam-on Is., | Ditto Ditto | 303 |
| Lamookatan I., | Borneo, W. | 349 |
| Lampon Bay, | Luconia, E. | 346 |
| *Lampoon Bay, | Sunda Strait | 90 |
| Lam's Bay, | Sumatra, W. | 79, 80 |
| †Lam-yet Is., | China, E. | 304 |
| Lanawan I., | Sooloo Sea | 384 |
| Lancava Pulo, | Malacca Strait | 156, 157 |
| †Landfall I., | Andaman, N. | 28 |
| †Laukeet I. & Flat, | Canton R. | 288 |
| Lantinga Pulo, | China Sea | 221 |
| *Lantoa I., | China, S. | 273 to 275, 287 |
| Lantoa Passage, | Ditto Ditto | 271, 272 |
| *Lapurip I., | China Sea | 327 |
| Larantuca & Gut, | | 471, 472 |
| Larchin Is., | Siam Gulf | 223 |
| *Larg I., | Sumatra, W. | 85 |
| Lark's Bay, | China, S. | 266 |
| †Lassem Hill & Town, | Java, N. | 352 |
| Lassey Pulo, | Sumatra, W. | 52 |
| Lassoa Point, | Celebes, S. | 406 |
| Latta I., | Moluccas | 484 |
| Laubo Laubo | Sumatra, W. | 84 |
| *Laughland's Is., | S. Pacific Ocean | 515 |
| †Laurel's Banks, | China Sea | 228 |
| *Laurel's Shoal, | Macassar Strait | 367 |
| *Laut Pulo Great, | Borneo, S. | 365 |
| †Laut Pulo Little, | Ditto Ditto | 364 |
| *Lava I., | Luconia, N. | 327 |
| †Lawn I., | Gillolo Passage | 418 |
| Laye, | Sumatra, W. | 69 |
| *Layken Point, | Celebes, S. | 405 |
| Leaga Bay, | Sumatra, W. | 52 |
| †Leat Pulo, | Gaspar Straits | 126 |
| †Lebaney Bay & Town, | Celebes, W. | 368 |
| Ledges of Rocks | Sincapour Strait | 187 |
| †Leegetan Is., | Sooloo Sea | 342 |
| Leema Pulo, | Sumatra, W. | 60 |
| *Leeuwaarden I., | Ceram, N. | 488 |
| *Leeuwaarden Shoal, | Ceram, N. | 488 |
| Lelfouw Road, | Timor, N. | 477 |
| Leigh's I., | New Ireland | 516 |
| Lelary I., | Moluccas | 484 |
| Lema Channel, | China, S. | 280, 282, 297 |
| *Lema Is., | Ditto Ditto | 281 |
| Lenque R., | Malacca Strait | 176 |
| *Lerang Point, | Java, N. | 452 |
| Leron Harbour, | Salibaboo Is. | 379 |
| *Lette I., | Timor Sea | 480, 481 |
| Leung-neeb I., | Canton R. | 270 |
| Leyden I., | Batavia Road | 104 |
| Leyte I., | Philippines | 342 |
| †Liant Ca., | Siam Gulf | 224 |
| Lieong-soy Bay, | Hainan | 250 |
| †Lieu-chew I., | China, S. | 265 |
| *Lieu-chew Is., | Japan Sea | 334 |
| †Ligor Bay, | Siam Gulf | 223 |
| Lima Is., | Borneo, W. | 350 |
| Limbe Strait, | Celebes, N. | 375 |
| Linago I., | Mindanao, N. | 342 |
| *Lincoln I., | China Sea | 252 |
| *Lingin I., | China Sea | 137, 313 |
| Linitan I., | Mindanao, S. | 378 |
| *Linting I., | China, S. | 277 |
| *Lintin I., | Canton R. | 286 |
| Lintin Sand, | Ditto Ditto | 287 |
| Lintin Spit or S. Sa, | Ditto Ditto | 271, 275, 286 |
| Lintoa, | China, S. | 258 |
| *Lisiansky's I., | N. Pacific Ocean | 523 |

Page.

*Lissamatula I., - Moluccas - - 416
Little Passage, - Malacca Strait - 156
Lizard Point, - England, W. 532, 533
Lobetobie Mount. Flores I. 466, 470, 471
Lobetobie Strait, Flores, E. - - 471
*Loboagee, - - Allass Strait - 461
Lo-chow, - - - China, S. 279 to 281
Lodowick Fort, - Java, E. - - - 453
*Lomblen I., - - Timor Sea - 473, 474
*Lombock N. Point, Lombock Str. 459, 460
*Lombock Peak, Lombock I. - 460
Lombock Strait, Lombock, W. 361, 458
Long I., - - - Billiton, W. - 126
Long I., - - - Java Sea. - - 456
Long I., - - - Mergui - - 19, 20
Long I, - - - New Guinea - 436
Long I., - - - Rhio Strait - - 139
Long I., - - - Sunda Strait - 93
Long Low I., - Billiton, S. - - 133
Long Middle Bank, Malacca Strait 180
Long Nose, - - New South Wales 502
Long Range Point, St. Helena - 527
Long Sand, - - Prince of Wales I. 160
Loo-kaup I, - - China, S. - - 298
Loo kaup-sye, - Ditto Ditto - 299
*Lookisong I., - Gillolo Passage 417
Loomaut Pulo, - Malacca Strait - 170
Loomboocan I., - Balabac Straits 339
Loompoor, - - Sumatra W. - 65
*Lord Auckland's Is. S Pacific Ocean 507
*Lord Howes I., - Ditto Ditto 508
*Lord North's I., N. Pacific Ocean 437
*Louisa Shoal, - China Sea - - 319
Lo-wang I., - - China, E. - - 306
*Low Head, - - Port Dalrymple 497
Low I., - - - Bengal Bay - 6
Low I., - - - China Sea - - 245
Low I., - - - Gaspar Straits - 126
†Low I., - - - Natuuas - 215, 216
Low I., - - - Rhio Strait - - 198
Loyalty Is., - - S. Pacific Ocean 519
†Lozin Pulo, - - Siam Guff - - 222
†Luban I., - - - China Sea - - 322
Luban Pulo, - - Rhio Strait - - 140
*Lubeck I., - - Java Sea - - 400
*Lucepara I., - - Banca Strait - 110
*Lucepara Is., - Banda Sea - - 491
Lucepara Point, Sumatra, E. - 112
Lucepara Shoals, Banca Strait - 113
Luconia, E., - - Philippines - - 345
Luconia I., - - Ditto - - 316, 322
Luconia, S., - - Ditto - - - 343
Lueng-Suitow I., China - - - 271
Lugue, - - - Luconia, W. - 325
Lui-chew-fu, - China, W. 247, 251, 257
Lutangan I., - - Mindanao, S. - 380
*Lydea's I., - - Carolinas - - 522
Lyee-moon, - - China, S. - - 296
Lyly I. & Shoal, Macassar Road 368
Lynn Shoal, - - Sunda Strait - 109
Lys Shoal, - - Mergni - - 19, 20

M.

Maat Suokers Is., Va. Diemen's La. 495
Mabag I., - - Babuyanes - - 328
†Maba I. & Vill. Gillolo, E. - - 419
*Mabo Ca., - - Battanta I. - - 425
Macao Road, - China S. - 270, 284
*Macao Town & Har., Ditto Ditto - 285
*Mac Askills Is., - Carolinas - - 522
*Macassar, - - Celebes, W. - 368
Macassar Strait, Do. Do. 361 to 366, 396
*Macclesfield Bank, China Sea - - 254
Macclesfield I., - China, E. - - 307
*Macclesfield Strait, Banca, E. - - 125
Ma-cheung-cock, Canton R. - - 267
Mackian I., - - Moluccas - - 483
Mc'Cluers Inlet, New Guinea, W. 435
Mc'Pherson's Strait, Andaman Great 30
*Macquarie Har. Van Diemen's Land 494
*Macquaries I., - S. Pacific Ocean 507
Madagascar, - - Indian Ocean - 523
*Madjicosemah Is., Japan Sea - - 333
Madoo I., - - Celebes Sea 468, 470
Madramacan I., Mergui R. - - 20
Madras, - - - Hindoostan, E. 524
*Madura I., - - Java, E. - - - 453
*Madura Strait, - Ditto Ditto - - 452
Mady Pulo Great, Bantam Bay - 101
Mady Pulo Little, Ditto Ditto - 101
†Magdalens Shoal, Gaspar Straits - 129
Magna Port, - Philippines - - 345
Mah-wan I., - - Canton R. - - 274
Maignia I, - - Cochin China - 242
*Majo Pulo, - - Sumbawa, N. 449, 460
Makalara I., - - Near Siao - - 376
Malabar C., - - Hindoostan, W. 524
*Malacca, - - - Malacca Strait - 178
Malacca Passage, Achen Is. - - 39
Malacca Strait, - Sumat. N. 146, 394, 523
Malapis Is., - - Borneo, W. - - 350
Malay C. - - - Malacca Strait - 156
Malaya, E., - - China Sea - - 220
Malahumasan I., Philippines - - 345
Malampaya Bay, Palawan, W. - 321
Malana I., - - Moluccas - - 490
*Maldemarenda Point, Azores - - 531
Maloodoo Bay, - Borneo, N. - - 337
Mal-low-chow, - China, S. - - 285
Malora Pulo, - Achen Is. - 39, 151
Maloza R. - - Baseelan I., - 336
*Mamalakjee, - - Celebes Sea - 448
Mambahenawan I., Borneo, E. - 340
Mamburao Bay, Mindora, W. - 393
*Mamee Chow, - China, S. - - 259
Mamee Chow Point, Ditto Ditto 260
†Mampava R. & Point, Borneo, W. 349
†Manado, - - - Celebes, N. - 375
Manalipa I., - - Mindanao, S. - 383
Manavolka I., - Banda Sea - - 488
*Mancap Pulo, - Borneo, S. - - 352
Mancap Shoals, Ditto Ditto 352 to 354
Manchow, - - Hainan I. - - 250
*Mandalique I., - Java, N. - - - 452
Mandang I., - - Near Siao - - 376
*Mandarin's Cap, China, S. - - 261
*Mandhar Ca., - Celebes, W. - 368
Mandol Strait, - Sumatra C. - - 144
Mandoota R, - Sumatra, W. - 67
Maneaters I. & Shoal, Java, N. - 102
Mangallom I., - Borneo, W. - 347
Mangarin Port, Mindora, W. - 390
Mangerye Strait, Flores, W. - - 466
Mangoak I., - - Banguey - - - 338
Mango Bay, - - Sapy Strait - - 465
Mangrove Harbour, Flores, W. 466
†Mangsee Is., - Balabac Straits - 339
Mangs Is., - - Marian Is, - - 442
Manilla Bay, - Luconia, W. - 309
*Manilla, - - - Ditto Ditto 313 to 315
Manilla Straits, - Philippines - - 343
*Manipa I., - - Bouro, E. - - 486
Man-me-chow, - China, S. - 275, 276
†Manna Point, - Sumatra, W. - 73
*Manook-manookan I., Sooloo Sea 340
Manouaran Pulo, Waygeeooc, N. 422
Mansfield I., - - Dampiers Strait 427
*Mansfield's Shoal, Celebes, S - - 406
†Massa Teega, - Borneo, W. - - 350
†Mantannane Is., Borneo, W. - - 347
†Maratua I., - - Borneo, E. - - 374
Marawan, - - Banca, E. - - 131
Marbaboe, - - Java, N. - - - 452
Marboo R., - - Malacca Strait - 159
Maregolang, I., - Moluccas - - 484
*Margarets I, - - Carolinas - - 522
Maria Ca., - - New Zealand - 507
Maria Port, - - Mindanao, W. - 386
Maricaba I., - - Luconia, S. - - 345
Marinduque I., - Ditto Ditto - 345
Mariveles I & Bay, Luconia, W. - 314
*Marlborough Fort, Sumatra, W. - 69
*Marlborough Point, Ditto Ditto - 83
†Marra Pulo, - - Ditto Ditto - 64
†Martaban, - - Bengal Bay - - 17
†Martin St. I. & Reef, Aracan C. - - 4
*Mary St. I., - - Azores - - - 531
Masbate I., - - Luconia, S. - - 345
†Mascall I., - - Chittagong - - 1, 2
Masi Bay, - - Mindora, W. - 393
Massang Hills, - Sumatra, W. - 58
Matacote I., - - Sapy Strait - - 464
*Mataha I., - - Sooloo Sea - - 385
Mataran, - - - Lombock, E. - 462
*Matelotas Is. - N. Pacific Ocean 440
Masinglo Point, Luconia, W. - 323
*Mattabella Is., - Banda Sea - - 488
*Matthews I., - - S. Pacific Ocean 520
†Matthew St. I., - Mergui C. - - 23
*Matthew St. Is., Moluccas - - 414
Mauritius I., - - Indian Ocean - 523
†Meangis I., - - Mindanao, S. - 379
†Meaxima I., - - Japan Sea - - 334
Medow's Port, - Andaman Great 29
*Mendoza's I., - China, E. - - 299
†Mensular I., - - Sumatra, W. - 53
Merak Is. & Har. Sunda Strait - 99
Merdoo, - - - Sumatra, N. - 152
*Mergui, - - Bengal Bay - 18, 20
*Meriere I., - - N. Pacific Ocean 438
*Meroe I., - - Nicobars - - 37
†Mew I. & Bay, - Sunda Strait 96, 97
Mew-stone, Van Diemen's Land 495
Mey-hou-so Point, China, E. - - 305
*Meyo I., - - - Molucca Passage 381
Mi-a-tao Is., - - China, E. - - 309
*Michael St. I., - Azores - - - 530
*Michael St. I. & Shoals, Sooloo Sea 340
Middle Arm, Van Diemen's Land 499
Middle Brother, Dryon Straits - 142
Middleburgh I., Batavia Road 102, 104
*Middleburgh I., New-Guinea - 435
†Middleburgh Reef, China Sea - - 237
Middleburgh Shoal, Dryon Straits 143
Middle Channel, Balabac Straits 339
Middle Channel, Batavia Road - 104

| | | Page. |
|---|---|---|
| Middle Ground, | Broken Bay - | 505 |
| Middle Ground, | Pegu R. - - | 14 |
| Middle Ground, | Port Jackson - | 503 |
| Middle Ground, | Port St. Vincent | 518 |
| Middle Ground, | Prince of Wales I. | 161 |
| Middle Head, - | Port Jackson - | 502 |
| Middle I., - - | Achen Head - | 40 |
| Middle I., - - | Alloo Strait - | 474 |
| Middle I., - - | Hainan, S. - - | 249 |
| †Middle I., - - | Mergui C. - - | 24 |
| *Middle I., - - | Salayer Straits - | 408 |
| Middle I., - - | Sincapour Str. | 187,198 |
| Middle Is., - - | Sapy Strait - - | 464 |
| Middle I., - - | Xullas - - - | 415 |
| Middle Passage - | Gaspar Straits - | 132 |
| Middle Rocks, - | China, S. - - | 299 |
| Middle Sand, - | Moluccas - - | 485 |
| Middle Shoal, - | Port Dalrymple | 499 |
| †Middle Strait, - | Andaman Great | 29,30 |
| *Middleton's Is. & Reef, | S.PacificOc. | 508 |
| Miguel de Naga St., | Luconia, E. - | 346 |
| Miguel St., - - | Philippines - - | 345 |
| Minangas Port, - | Luconia, W. - | 323 |
| Mindanao I., | Philippines | 374, 386, 395 |
| *Mindanao R. & Town, | Mindanao I. | 380 |
| Mindora I., - - | Philippines - | 345, 393 |
| Mindora Straits, | Mindora, W. | 389,395 |
| *Mintao I., - - | Sumatra, W. - | 79 |
| †Minto Rocks, - | Borneo, W. - | 351 |
| Mintow, - - - | Banca, W. | 118, 119 |
| *Mir's Bay, - - | China, S. - - | 296 |
| *Mitre I., - - - | S Pacific Oc. - | 521 |
| Moa I., - - - | Timor Sea - - | 481 |
| *Moar Pulo, - - | Gillolo, E. - - | 418 |
| †Moco Moco, - - | Sumatra, W. - | 67 |
| Mohea Pulo, - | Malacca Strait - | 156 |
| *Molucca Is., - - | Celebes, E. - - | 483 |
| Molucca Passage, | Ditto Ditto | 395 to 397 |
| *Money's I., - - | China Sea - - | 253 |
| †Mong-chow, - - | Canton R. - - | 267 |
| Mong-chow, - - | China, S. - - - | 262 |
| Mongos Mongos | Luconia, W. - | 324 |
| Monnikendam I., | Batavia Road - | 106 |
| *Monopin Hill, - | Banca, N. - | 112, 118 |
| Montanha I., - | China, S. - - | 266 |
| *Montaran Is., | Billiton, E. | 358, 359, 360 |
| Monthoule I., - | Nicobars - - - | 38 |
| †Mooarro Pulo, - | Borneo R. - - | 348 |
| †Mooleegee Is., - | Sooloo Sea - - | 340 |
| †Moolenwerfe Shoal, | Java, N. - - | 107 |
| †Mora Mount, - | Malacca Strait - | 179 |
| Moreallam, - - | Sumatra, W. - | 73 |
| *Moresses I., - - | Borneo, S. - - | 364 |
| Moretop Ca. - - | New S. Wales - | 508 |
| *Morty I., - - - | Gillolo, W. - | 380, 381 |
| Mosia Mount, - | Java, N. - - - | 452 |
| †Mosque Point, - | Aracan R. - - | 5 |
| Mother & Daughter, | Bouro, E. - | 485 |
| Mother & Daughters, | New Britain | 516 |
| Motir I., - - - | Moluccas - - | 483 |
| Motoe Is., - - | China, S. - - | 274 |
| Motow Fort, - | Canton R. - - | 267 |
| *Moulin's I., - - | S Pacific Ocean | 519 |
| Mountain Point, | Azores - - - | 530 |
| Mount Direction, | Van Diemen's La. | 496 |
| Mount Lookout, | China, S. - - | 260 |
| Mozambique Ch., | Africa, E. - - | 524 |
| †Muckay, - - - | Sumatra, W. - | 49 |
| Mudaĉoos Is., - | Malacca Strait - | 170 |
| Mud Flat, - - | Banca Strait - | 114 |
| Mui-gui, - - - | Tsiompa - - - | 231 |
| Muncooda Pulo, | Banca, N. - - | 132 |
| Murcielagos Is., | Mindanao, N. - | 342 |
| Murray's Is., - - | Torres Strait | 509, 511 |
| †Musa Port, - - | Babuyanes - - | 328 |
| Muscos Is., - - | Tavay C. - - | 17 |
| Musquito Pulo, - | Sumatra, W. | 62,64,66 |
| Mynderk Shoal, | Java, N. - - - | 103 |
| Mynder's Rocks, | Java, E. - - - | 456 |
| Mysole I., - - | Moluccas - - | 425 |
| †Mysory I., - - | New Guinea, N. | 436 |

N.

| | | |
|---|---|---|
| Nancavsa Is., - | Junkseylon - - | 25 |
| *Nam-oa Harbour & I., | China, S. - | 262 |
| Nam-paug I., - | Ditto Ditto | 261 |
| Namo, - - - | Ditto Ditto | 297 |
| Nancy Pulo, - - | Achen Is., - - | 40 |
| *Nanga-saque, - | Japan Is. - - | 334 |
| *Nangga Harbour, | Sunda Strait - | 90 |
| *Nanka Is., - - | Banca Strait | 116, 122 |
| *Nankin - - - | China, E. - - | 308 |
| *Narcondam I., - | Bengal Bay, - | 33 |
| Nasomver Droogte, | Java Sea - - | 106 |
| *Naso Point, - - | Panay, W. - - | 387 |
| Nassouwen's Gat, | Ceram, W. - - | 487 |
| Natal, - - - - | Africa, S. - - | 524 |
| *Natal Bay & Town, | Sumatra, W. | 55 |
| Natal Hill, - - | Ditto Ditto - | 54 |
| *Natuna Great - | China Sea - - | 215 |
| *Natunas, N. - - | Ditto Ditto | 214, 336 |
| *Natunas, S. - - | Ditto. Ditto. | 216, 348 |
| Needle Rock, - | Canton R. - - | 271 |
| Needle Rocks, - | China, S. - - | 277 |
| Needles, - - - | Isle of Wight - | 535 |
| Nee-wok I., - - | China, S. - - | 261 |
| Nest I., - - - | Cochin China - | 242 |
| *New Guinea, S. | Pacific Oc. | 434, 482, 510 |
| *New Hebrides, | Ditto Ditto - - | 521 |
| New Holland, N. | Timor Sea - - | 482 |
| New I., - - - | S. Pacific Ocean | 519 |
| *New I., - - - | Timor Sea - - | 480 |
| New South Wales, | S. Pacific Ocean | 501 |
| †Nhiatrang Bay, - | Cochin China - | 239 |
| Niamo Pulo, - | Sumatra, W. | 62, 64, 66 |
| *Nicholas St. Point, | Java, N. - - | 99 |
| Nicholas St. Shoal, | Manilla Bay | 314, 315 |
| *Nicobar Great, - | Bengal Bay - - | 38 |
| *Nicobar Is., - - | Ditto Ditto - | 33 to 39 |
| †Nicobar Little, - | Ditto Ditto - - | 38 |
| Nightingale I., - | Madura, E. - | 454 |
| Nila I., - - - | Timor Sea - - | 481 |
| *Nine Pin, - - | China, S. - - | 295 |
| Ning-po R., - - | Ditto Ditto - - | 307 |
| †Ninth I., - - - | Bass' Strait - - | 500 |
| †Noel Is., - - - | Bengal Bay - | 22 |
| Noesa Baron, - | Java, S. - - - | 88 |
| *Noesa Comba, - | Celebes Sea - - | 402 |
| Noesa Laut, - - | Ceram, S. - | 487, 490 |
| *Noesa Seras - - | Celebes Sea - | 367 |
| †Noessaniva Point, | Amboina I. - | 488 |
| *Noncowry I. & Harbour, | Nicobars | 35,36 |
| Norfolk Bay, - | Van Diemen's La. | 496 |
| *Nomo Ca., - - | Japan Is. - - | 334 |
| *Norfolk I., - - | S. Pacific Ocean | 520 |
| †Norman's Point, | Chittagong R. - | 3 |
| North Bay, - - | Van Diemen's La. | 496 |
| North Black Rock, | St. Helena I. - | 527 |
| North Breakers, | Bencoolen - - | 70 |
| North Channel, - | Sincapour Str. | 194, 197 |
| North I., - - - | Bouton Strait - | 411 |
| North I., - - - | Gaspar Straits - | 126 |
| North I., - - - | Pantar Strait - | 474 |
| North I., - - - | Salayer Straits | 407, 408 |
| *North I., - - - | Sunda Strait - | 108 |
| *North Rock, - - | Calamianes - - | 391 |
| †North Sand, - - | Malacca Strait | 164 |
| *North Shoal, - - | Paracels - - - | 252 |
| Northumberland Is., | New S. Wales | 514 |
| Northumberland Shoal, | Mindanao, S. | 379 |
| Northumberland Str. | Calami. | 389, 391, 395 |
| †Norway Is., - - | Tonking Gulf - | 248 |
| *Now-chow, - - | China, S. - - | 257 |
| Nun Rock, - - | Manilla Bay - | 314 |
| Nuoc-ngol Point, | Cochin China - | 244 |
| †N. W. I., - - - | Natunas - - - | 215 |
| *N. W. Rock, - | Calamianes - - | 392 |
| *Nyas Pulo, - - | Sumatra, W. - | 78 |

O.

| | | |
|---|---|---|
| *Observation Bank, | Paracels - - | 253 |
| Obtuse Cone, - | Mindanao, S. - | 378 |
| Oby Major I., - | Moluccas - - | 416 |
| *Oby Pulo, - - | China Sea - | 224, 225 |
| Oby Pulo False, | Ditto Ditto - - | 225 |
| †Occuse, - - - | Timor, N. - | 477, 478 |
| *Offak Harbour, - | Waygeeooe, N. | 422 |
| †Old Lamata, - - | Ceram, N. - - | 487 |
| *Ombay I., - - | Timor Sea - | 474, 475 |
| Ombay Passage, | Ditto Ditto - | 399, 447 |
| Omonkon I., - | Mindanao, N. - | 342 |
| Ong-ro Harbour, | Cochin China - | 241 |
| Onkona Point, - | Celebes, W. - | 369 |
| Onrust I., - - | Batavia Road | 103, 106 |
| Onrust Knowl, - | Onrust I., - - | 103 |
| *Ontario's Shoal, - | Borneo, W. - | 356 |
| Ontong Java Pt. & Reef, | Java, N. - | 103 |
| Oobeean I., - - | Sooloo Sea - - | 340 |
| *Oojong Carrang, | Sumatra, W. - | 69 |
| Oojong Lalloo, - | Ditto Ditto - | 56 |
| †Oojong Massang, - | Ditto Ditto - | 57 |
| Oojong Rajah, - | Ditto Ditto - | 52 |
| Oojong Seecarboa, | Ditto Ditto - | 57 |
| Oolar Pulo, - - | Sumatra, W. - | 64 |
| Oomowoomang I., | Sunda Strait - | 90 |
| †Ooloogan Bay, - | Palawan, W. - | 320 |
| Oosadda I., - - | Sooloo Sea - - | 340 |
| Oosookan I., - - | Borneo, W. - | 347 |
| †Ophir Mount, - | Sumatra, W. - | 57 |
| *Orange Fort, - | Ternate I. - - | 483 |
| Orange I., - - | Sumatra, W. - | 66 |
| Orinsis Bay, - - | China, S. - - | 303 |
| Orphan Mountain, | Sumatra, N. - | 42 |
| Orpheus' Bank, - | Banda Is. - - | 490 |
| Orr Pulo, - - - | Gillolo, E. - - | 419 |
| *Ossa Bay, - - | Ditto Ditto - - | 419 |
| *Osterly's N. Shoal, | Billiton, E. - | 359 |
| Otta Pulo, - - | Gillolo, E. - - | 419 |
| Otway Ca., - - | Bass' Strait - - | 490 |
| Ou-cheun, - - | China, S. - - | 257 |
| Oujong Rajah, - | Sumatra, N. - | 152 |

| | | Page. |
|---|---|---|
| Ou-su I., | Amoy Harbour | 303 |
| Outah I., | Gillolo Passage | 420 |
| Outer Channel, | Batavia Road | 102 |
| Outer Cove, Van | Diemen's La. | 498, 499 |
| Outer Passage, | China Sea | 206, 310 |
| Owers, | British Channel | 535 |
| *Oyster Bay & I., | Van Diemen's La. | 497 |
| Oyster I., | Aracan C. | 5 |

P.

| | | |
|---|---|---|
| Pacific Ocean, | New Guin. E. | 434, 443 |
| *Padang Is. & Head, | Sumatra, W. | 60 |
| *Padaran Ca., | Cochin China | 232, 237, 312 |
| †Padewawy Bay, | Sandalwood I. | 467 |
| Padron Ca., | Africa, S. | 524, 525 |
| *Pagoda Ca., | Cochin China | 241 |
| †Pagoda Point, | Ava C. | 9 |
| †Pahang R., | Malaya, E. | 220 |
| *Pajaros I., | Marian Is. | 442 |
| Pakango R., | Malaya, E. | 220 |
| Pak-leak-low I., | China, S. | 276 |
| Pak-ting, | Canton R. | 267 |
| Pala I., | Celebes, N. | 377 |
| Palambam R. & T., | Sumatra, E. | 117, 118 |
| Palaon Bay, | Mindora, W. | 394 |
| Palapa Port, | Philippines | 344 |
| Palaubi I., | Luconia, N. | 326, 327 |
| *Palawan I. & Shoals, | China Sea | 320, 321 |
| Palawan Passage, | Ditto Ditto | 207, 321 |
| Palleeangan I., | Sooloo Sea | 340 |
| Palmer's Shoal, | Banca, E. | 131 |
| Palos Bay, | Celebes, W. | 369 |
| Pamalang Point, | Java, N. | 451 |
| *Pamanookan Point, | Java, N. | 450 |
| *Pamaroong I., | Borneo, E. | 373 |
| Pamoojo Pulo, | Banca, N. | 132 |
| *Panay I., | Philippines | 387, 395 |
| Pancal Pulo, | Sumatra, W. | 57 |
| *Pandan Pulo, | Malacca Strait | 155 |
| *Pandora's Entrance, | Torres Strait | 511 |
| Pamelia I., | Mergui C. | 19, 20 |
| Pangasani I., | Bouton Strait | 410, 411 |
| Pangasinan Bay, | Luconia, W. | 324, 325 |
| Pangel I., | Malacca Strait | 159 |
| *Pangootaran I., | Sooloo Sea | 340 |
| Pangoriang, | Java, N. | 100 |
| Panjang I., | Celebes Sea | 468, 470 |
| †Panjang Pulo, | Ayer Bongy Bay | 57 |
| †Panjang Pulo, | Banca, E. | 130, 131 |
| Panjang Pulo, | Bantam Bay | 100 |
| *Panjang Pulo, | China Sea | 138, 139, 198 |
| Panjang Pulo, | Junkseylon | 25, 156 |
| †Panjang Pulo, | Siam Gulf | 224 |
| Panjang Pulo, | Tappanooly Bay | 53 |
| Panjang Reef, | Malacca Road | 177 |
| *Panka Point, | Java, N. | 452 |
| Pan-lung-shee, | Macao | 285 |
| Panneu Pulo, | Sumatra, W. | 66 |
| Panoan I. & Strait, | Philippines | 342 |
| *Pantar I. & Strait, | Timor Sea | 474 |
| Pantjoor I., | Malacca Strait | 144 |
| Pan Shoal, | Rhio Strait | 140, 194 |
| Panuctan I., | Bahuyanes | 328 |
| *Panumbangan Pulo, | Borneo, W. | 350 |
| Papan Channel, | Ditto Ditto | 351 |
| †Papan Pulo, | Ditto Ditto | 351 |
| †Papra Strait, | Mergui, S. | 24 |
| *Paracels, | China Sea | 252 |
| †Paraquas, | Palawan, W. | 321 |
| *Parcelar Hill, | Malacca Str. | 168, 172, 199 |
| †Parcelar Point, | Ditto Ditto | 172, 173 |
| †Parlis R., | Ditto Ditto | 156 |
| Parmasang Hills & Point, | Banca I. | 114 |
| *Parry's I., | Pacific Ocean | 522 |
| †Passage I., | Andamans | 31 |
| Passage I., | Balabac Straits | 339 |
| *Passage I., | China, S. | 262 |
| Passage I., | Kangelang, E. | 455 |
| Passage I., | Mindanao, N. | 342, 343 |
| Passage Is., | Dryon Straits | 143 |
| †Passage I., | Sumatra, W. | 50, 63, 78 |
| Passamane Bay, | Ditto Ditto | 57, 58 |
| Passangan R. & Point, | Sumatra, N. | 152 |
| Passenburgh I., | Nangasaque Har. | 335 |
| Passier Grove, | Sumatra, N. | 153 |
| Passier Pulo, | Sumatra, W. | 60 |
| †Passier R. & Town | Borneo, E. | 372, 373 |
| Passig I., | Celebes, N. | 376 |
| *Passoo Keah I., | Paracels | 254 |
| *Pata-he-cock I., | China, E. | 305 |
| Pata I., | Sooloo Sea | 341 |
| †Patani Ca. & Bay, | Siam Gulf | 222 |
| Pata Point, | Luconia, W. | 326 |
| *Patappan Pulo, | Sunda Strait | 90 |
| †Pat-cha-san I., | China S. | 308 |
| *Patches of Coral, | China Sea | 254 |
| *Pat-chow, | Japan Sea | 333 |
| *Pater Nosters Great, | Celebes Sea | 459 |
| *Pater Nosters Little, | Macas. Str. | 369, 372 |
| Pathang, | Sumatra, W. | 73 |
| *Patientia Strait, | Moluccas | 484 |
| *Pattles I., | Paracels | 253 |
| Pauk-pyah I., | China, S. | 258 |
| Paul's St. Mountains, | Banca I. | 112 |
| Payers, | Malacca Strait | 156 |
| Peaked Hill, | Celebes, S. | 406, 407 |
| Peaked I., | Natunas | 215 |
| Pearl L., | Tonking Gulf | 247 |
| Pedir C., | Sumatra, N. | 147, 151 |
| *Pedir Point, | Ditto Ditto | 151 |
| *Pedir, | Ditto Ditto | 152 |
| *Pedro Branco, | China, S. | 302 |
| *Pedro Branco, | Sincapour Str. | 189, 192 |
| Pedro-mea | Macao | 285 |
| Pedro Point, | Sumatra, N. | 151 |
| Peelas I., | Sooloo Sea | 385 |
| Peejow, | Allass Strait | 462 |
| *Pegu Coast & R., | Bengal Bay | 12, 13 |
| *Pehoe Is., | Formosa Strait | 333 |
| *Pei-ho, | Pekin Gulf | 309 |
| *Pellew Is., | N. Pacific Ocean | 438 to 440 |
| Peng-chow, | China, S. | 297 |
| *Penguin I., | Van Diemen's La. | 496 |
| Penoo, | Sumatra, W. | 73 |
| Pepery Road, | Siam Gulf | 223 |
| Pepper Bay, | Java, N. | 97 |
| Perah Bank, | Malacca Strait | 152, 162, 200 |
| Perah C. & River, | Ditto Ditto | 162, 163, 200 |
| *Pera Pulo, | Ditto Ditto | 158 |
| †Perforated I., | Bengal Bay | 24 |
| Perforated Rock, | Cochin China | 241 |
| Pergany Pulo, | Sumatra, W. | 64 |
| Persaim R., | Ava C. | 9 |
| Persian Gulf, | Arabian, E. | 524 |
| *Pesqueira Alto Point, | Azores | 529 |
| Peter's St. I., | Hainan | 249 |
| Peurcos, | Manilla Bay | 314 |
| Phanran Bay & Har., | Cochin China | 237 |
| Phanry Bay & R., | Tsiompa | 231 |
| Philippine Is., | Eastern Sea | 342, 382, 395 |
| Phuiay Bay, | Tsiompa | 231 |
| †Phuyen Bay & Har. | Cochin China | 242, 311 |
| Piapis Harbour, | Waygeeooee, N. | 422 |
| *Pico I., | Azores | 529 |
| *Pierre St. I., | Borneo, W. | 216 |
| †Pigeon House, | New S. Wales | 502 |
| †Pigeon I., | Dampier's Strait | 426 |
| Pigeon I., | Moluccas | 490 |
| *Pigot Point, | Waygeeooe, E. | 430 |
| Pilgrims, | Malacca Strait | 156 |
| †Pillar Ca., | Van Diemen's La. | 496 |
| Pillilew I., | N. Pacific Ocean | 439 |
| Pilot Cottah Creek, | Chittagong C. | 2 |
| *Pines I., | S. Pacific Ocean | 518 |
| †Pine Tree I., | Mergui C. | 23 |
| Ping-hoi, | China, S. | 299 |
| †Pinnacle Rock, | Calamianes | 392 |
| *Pinnunko I., | Token Besseys | 413 |
| Pi-pa-chow, | China, S. | 263 |
| Pisang Banks, | Malacca Strait | 180, 181 |
| Pisang Pulo, | Banda Is., | 490 |
| †Pisang Pulo, | China Sea | 217 |
| *Pisang Pulo, | Gillelo Passage | 418 |
| Pisang Pulo Kecheel, | Sumatra, W. | 61 |
| *Pisang Pulo, | Malacca Strait | 180, 199 |
| Pisang Pulo, | near Padang | 61 |
| *Pisang Pulo, | Sumatra, W. | 74 |
| Pio Quinto (San) Port, | Babuyan Is. | 328 |
| *Pitt Mount, | Norfolk I., | 520 |
| Pitt's Passage, | Moluccas | 399, 414, 447 |
| Pitt's Strait, | New Guinea, W. | 425, 431 |
| Pitt's Strait, | Solomon Is. | 519 |
| Pitt Water, | Broken Bay | 505 |
| Plantain I., | Mergui | 19, 20 |
| Playa Honda, | Luconia, W. | 323 |
| *Pleasant I., | Pacific Ocean | 522 |
| Ploughman, | China, E | 305 |
| †Poggy, N., | Sumatra, W. | 84 |
| *Poggy S., | Ditto Ditto | 85 |
| Polley, | Ditto Ditto | 69 |
| Pollock Cove, | Mindanao I. | 380 |
| †Polo I., | Luconia, E. | 346 |
| *Ponchang Cacheel, | Tappanooly Bay | 53 |
| Ponchang Gadang, | Ditto Ditto | 53 |
| *Pendy I., | Madura Bay | 453 |
| †Ponkan R., | Formosa, W. | 332 |
| Pontangh Point, | Bantam Bay | 101 |
| Pontangh Pulo, | Ditto Ditto | 100 |
| *Pontiana R., | Borneo, W. | 349 |
| Pontiana Mount, | Malacca Strait | 183 |
| †Poogong Mount & Pt. | Sumatra, W. | 74 |
| Pooloo Bay, | Ditto Ditto | 71 |
| Poonooboo Pulo, | Sumatra, E. | 137 |
| Poonyabang, | Banca, W. | 119 |
| Pootoy I., | China, S. | 280 |
| *Popo Pulo, | Pitts Passage | 425 |
| †Porian I. & Reef, | Ava C. | 12 |
| Porian Point, | Ava R. | 9, 10 |
| Portland Bill, | England, S. | 534, 535 |
| †Portlock's Reef, | Torres Strait | 511 |
| *Portland Ca., | Van Diemen's La. | 497, 500 |
| Porto Praya Bay, | Azores | 530 |
| Portuguese Bay, | Amboina | 488 |
| Possession I., | Torres Strait | 513 |
| Post Horse, | Celebes Sea | 468 |
| *Postillions, | Do. Do. | 401, 448, 460 |

| | | Page. |
|---|---|---|
| Potbakers I., | Moluccas | 483 |
| †Potoe I., | China, S. | 269 |
| †Potol Point, | Panay, W. | 388 |
| Potters I., | Moluccas | 484 |
| *Pratas Shoal & I., | China Sea | 256 |
| Praya Sand & R., | Prince of Wales I. | 161 |
| *Preparis I. & Reef, | Bengal Bay | 11, 26 |
| Preservation I., | Bass' Strait | 500 |
| †Priaman Is. & R. | Sumatra, W. | 59 |
| *Price Cape, | Andaman, N. | 27 |
| *Princes I., | Sunda Strait | 95 |
| *Prince of Wales Bank, | China Sea | 318 |
| *Prince of Wales I. | Malacca Strait | 158, 200 |
| *Princeof WalesGroup, | Torres Str. | 512, 513 |
| PrincessChar.Bay, | New South Wales | 514 |
| Princes Strait, | Java Head | 96 |
| †Pring, | Sumatra, W. | 73 |
| †Printian Pulo, | Siam Gulf | 221 |
| Prosperous Bay, | St. Helena | 527 |
| Proute Pulo, | Banca, N. | 132 |
| *Providence Is., | Pacific Ocean | 436 |
| *Pruysen's Droogte, | Java Sea | 107 |
| Psyches Channel, | Mindanao, N. | 343 |
| Punyosoo Pulo, | Banca, N. | 132 |
| Purmerant Reef & I., | Batavia Road | 104 |
| *Pyramidal Rocks, | Natunas | 536 |
| Pyramid, | Cheduba | 7 |
| †Pyramid I., | Cochin China | 240, 311 |
| Pyramid Peak, | Bashee Is. | 330 |
| Pyramid Point, | China, S. | 298, 300 |
| *Pyramid Rock, | Paracels | 252 |

Q.

| | | |
|---|---|---|
| Quan-ngai R., | Cochin China | 244 |
| †Queda, | Malacca Strait | 156 |
| *Queen Char. Fore. | New Caledonia | 519 |
| *Queens Mountain, | Sumatra, N. | 42 |
| Quekmi Mount., | Martaban | 17 |
| Quemoy, | China, E. | 304 |
| *Que-san Is., | Ditto Ditto | 305 |
| Quinalazag, I, | Philippines | 346 |
| Quinhone City&Har., | Cochin China | 243 |
| *Quiniluban, I., | Mindora Sea | 389 |
| Qui-quick Port, | Cochin China | 245 |
| Quoin, | Borneo, W. | 356 |
| Quoin, | China, S. | 261 |
| Quoin Hill, | Java, N. | 452 |
| Quoin Hill, | Natuna Great | 215 |
| †Quoin I., | Nicobars | 34 |
| Quoin, | Sangir C. | 377 |

R.

| | | |
|---|---|---|
| Rabbit I., | Sangir | 377 |
| Rabbit, | Sincapour Strait | 186 |
| Racatt Pulo, | Sumatra, W. | 55, 56 |
| Race of Alderney, | England, S. | 534 |
| Race of Negrais, | Bengal Bay | 11 |
| Race of Portland, | England, S. | 535 |
| *Rachado Ca., | Malacca Strait | 174, 199 |
| *Rackit Pulo, | Java, N. | 400, 450 |
| *Ragged I., | Palawan, N. | 321 |
| Ragged Is., | Andaman Great | 28 |
| Ragged Point, | Borneo, E. | 370 |
| *Rajah Bassa, | Sunda Strait | 90, 91, 124 |
| *Rajah Pulo, | Junkseylon | 25 |
| *Rambang, | Java, N. | 450, 452 |
| *Ram Head, | New South Wales | 501 |
| Ramio Pulo, | Malacca Strait | 161 |
| Ramrie I., | Aracan C. | 6 |
| Ranger's Ledge, | Andaman, N. | 28 |
| Rangoon, | Pegu R. | 15 |
| *Rangoon R., | Pegu C. | 12, 14 |
| †Rat I., | Sumatra, W. | 69, 70 |
| Rawak Harbour, | Waygeeooe, N. | 422 |
| *Recherché Port, | Van Diemen's La. | 495 |
| †Redang Is., | Siam Gulf | 221 |
| Red Cliffs, | Sincapour I. | 189 |
| †Red Crab I., | Chittagong C. | 1 |
| Red I., | Bouro Bay | 485 |
| Red I., | Dryon Straits | 143 |
| Red I., | Malacca Road | 177 |
| Red I., | Sincapour Strait | 184 |
| *Red Point, | New South Wales | 502 |
| Red Sea, | Arabia, W. | 524 |
| Reef I., | Andaman Great | 28 |
| Reef I., | Sumatra, E. | 141 |
| Reef I., | Tavay R. | 17 |
| Reeburgh Fort, | Moluccas | 483 |
| Rees Bay, | Sapy Strait | 465 |
| Refreshment Head, | Sunda Strait | 90 |
| Regewin I., | Pitt's Strait | 434, 432 |
| †Reids Rocks, | Bass Strait | 499 |
| *Rendezvous I., | Borneo, S. | 351 |
| *Renyang Pulo,* | Sunda Strait | 94 |
| Revenges Strait, | New Guinea, W. | 433 |
| †Rhio & Strait, | Bintang, W. | 139, 194 |
| Rhun Pulo, | Banda Is. | 491 |
| Ridge Shoal, | British Chan. | 534 to 536 |
| Rijutan I., | Babuyanes | 327 |
| Riow I., | Moluccas | 381 |
| Risdon Cove, | Van Diemen's La. | 496 |
| *Rivers Ca., | Celebes, N. | 370 |
| Roang Is., | Ditto Ditto | 376 |
| Robbins I., | Port St. Vincent | 518 |
| *Roberts I., | Paracels | 253 |
| †Rockbo R., | Tonking Gulf | 247 |
| Rocky Ca., | Van Diemen's La. | 497 |
| †Rocky I., | China Sea | 214 |
| Rocky I., | Cochin China | 244 |
| *Rocky I., | Paracels | 252 |
| Rocky Is., | Allass Strait | 461 |
| Rocky Point Bay, | Aracan C. | 6 |
| Rocky Point, | Banca, E. | 127 |
| Rocky Point, | Hainan | 249 |
| Rocky Point, | New South Wales | 502 |
| *Rocky Point, | Sumbawa, N. | 463 |
| Roderigue I, | Indian Ocean | 523 |
| Rodong Pulo, | China Sea | 139 |
| †Roma I., | Timor Sea | 476, 493 |
| †RomaniaIs & Point, | Sincapour Strait | 190 |
| Romania Reef, | Ditto Ditto | 191 |
| *Rondo Pulo, | Achen Is. | 39 |
| Roosum Hill, | Sumatra, W. | 47 |
| Roosa Pulo, | Ditto Ditto | 47 |
| Roosoocan Is., | Borneo Road | 347 |
| Rosingeyn I., | Banda Is. | 491 |
| Ross I., | Andamans | 29 |
| Rotterdam I., | Batavia Road | 104 |
| Rotta, | Malacca Strait | 157 |
| *Rotto I., | Timor Sea | 479, 480 |
| Roundabout I., | China, E. | 307 |
| Round Brother, | Dryon Straits | 142 |
| Round Harbour, | Mysole, N. | 425 |
| *Round I., | Andamans | 31 |
| Round I., | Canton R. | 294 |
| Round I., | Cheduba | 6, 7 |
| Round I., | China, S. | 261 |
| Round I., | Namoa Harbour | 263 |
| Round I., | Port St. Vincent | 519 |
| Rou Pulo, | Gillolo Passage | 418 |
| *Royal Bishops Bank, | China Sea | 228 |
| Royal Bishops Shoal, | Sumatra, W. | 55 |
| *Royal Captains Shoal, | China Sea | 320 |
| *Royal Charlottes Shoal, | Ditto Ditto | 319 |
| Royal Sovereigns Shoal, | British Chan. | 535 |
| Ruba Point, | Azores | 529 |
| *Rugged Point, | Sumbawa, N. | 463 |
| †Ruib I., | Waygeeoo'e, W. | 421 |
| *Rusa Raji, | Flores, N. | 470 |
| *Rusa Linguete, | Ditto Ditto | 470 |
| †Rutland I., | Andaman Great | 30 |
| Rynland Shoal, | Batavia Road | 102, 105 |

S.

| | | |
|---|---|---|
| Saba Bay, | Savu I. | 480 |
| Sabadda Pulo, | Sumatra, W. | 65 |
| Sablat, | Ditto Ditto | 68 |
| Sabon Hill, | Sabon I. | 142 |
| Sabon I. & Strait, | Sumatra, E. | 144 |
| Sabtang I., | Bashees | 330 |
| †Saddle I., | China Sea | 214 |
| Saddle I., | Flores, W. | 466 |
| Saddle I., | Gaspar Straits | 126 |
| †Saddle I., | Natunas | 215 |
| Saddle I., | Sumatra, W. | 47 |
| †Saddle Mountain, | Andaman Great | 29 |
| Saddle Point, | St. Helena | 527 |
| *Saflanaf I., | Celebes Sea | 402 |
| Sahul Banks, | Timor Sea | 476 |
| *Sai-gon R.& City, | Cambodia | 229, 230 |
| Sail Shoal, | Malacca Strait | 170 |
| Sail Rock, | Mindora Strait | 392 |
| Salanama Pulo, | Malacca Strait | 155 |
| *Salangore, | Ditto Ditto | 169 |
| *Salatan Point, | Borneo, S. | 364 |
| *Salat Boora, | Sincapour Strait | 183 |
| Salawatty I., | New Guinea, W. | 431 to 433 |
| †Salayer I., | Celebes, S. | 409 |
| *Salayer Straits, | Ditto Ditto | 408, 448 |
| Salayer Pulo, | Java, N. | 99 |
| *Salibaboo Is., | Mindanao, S. | 378 |
| Salingsingan I., | Balabac Straits | 339 |
| Salleeolakit I., | Sooloo Sea | 382 |
| Salomague Bay, | Luconia, W. | 325 |
| Saloomale, | Sumatra, W. | 73 |
| Salsee R, | Sumatra, E. | 118 |
| Salt R., | Sumatra, E. | 118 |
| Sama Bay&Town, | Hainan, S. | 249 |
| Samanap, | Madura, E. | 454 |
| Samanca Peak, | Sumatra, S. | 75 |
| Samanky Pulo, | Sumatra, W. | 65 |
| *Samarang, | Java, N. | 450, 452 |
| *Samar I., | Philippines | 344 |
| *Sambas R., | Borneo, W. | 348 |
| Sambat, R, | Sumatra, W. | 74 |
| Sambelangan, | Sumatra, N. | 152 |
| *Sambilangs, | MalaccaStrait | 162, 200 |
| *Samboangan, | Mindanao | 383 |
| Sam-chow, | China, S. | 266 |
| Sam-chow-tong, | Ditto Ditto | 264 |
| Sam cock I., | Canton R. | 270 |
| Sam-coke I, | China, S. | 301 |
| Sam-moon Is., | Ditto Ditto | 277 |
| Sampan Chow, | Canton R. | 289 |

Page.

Sancori Pulo, - Siam Gulf - - 223
†Sandakan Bay, - Borneo, E. - 340
*Sandalwood I., - Timor Sea - 467,523
†Sandana Ca. & Mount, Java, E. - 456
*Sandbuys Shoal, Sumbawa, N. - 449
*Sand Downs Point, China, S. - - 302
Sandwich Ca., - New South Wales 514
Sandy Bay, - - St. Helena - - 527
*Sandy Ca., - - New South Wales 508
Sandy I. & Point, Ava C. - - - 9
Sandy I., - - - Cochin China - 246
Sandy I., - - - Gaspar Straits - 126
Sandy I., - - - Sumatra, W. - 66
Sandy I., - - - Timor, W. - - 479
Sandy Point, - Hainan, S. - - 249
Sandy Point, - New South Wales 514
†Sangboys Is., - - Sooloo Sea - - 385
Sangeegee, - - Lombock Strait 458
*Sangir, - - - Mindanao, S. 376,380
*San-ho Ca., - - Cochin China - 243
Santa Cruz, - - Azores - - - 529
*Santa Cruz I., - Pacific Ocean 518,519
Santa Cruz Is., - Mindanao, S. - 383
Santa Cruz Point, Mindora, W. - 393
Santa Isabel, - - Solomon Is. - 519
Santiago Point, - Luconia, S. - - 345
San Vizente Port, Luconia, N. - 326
Saparooa, - - - Moluccas - - 490
*Sapata Pulo, - - China Sea - - 234
Sapy Bay & Town, Sumbawa, E. - 464
Sapy Strait, - - Ditto Ditto 448, 463
Saradong Pulo, - Sunda Strait - 90
Sarah Galley I., China, E 306, 307
Sarah's Bossom, Lord Auckland's Is. 508
Sato Pulo, - - Sumatra, W. - 60
Savages, - - - Aracan R. - - 5
*Savu I., - - - Timor Sea - - 480
*Sawa Bay & Town, Ceram, N. - - 487
Sawang, - - - Sumatra, N. - 152
†Saw-chow, - - Canton R. 274, 275
Saw-lowang Bay, Ditto Ditto - 274
Sawshee Hill, - Ditto Ditto - 292
*Saypan I., - - Marian Is. - - 442
Saytan Pulo & Harbour, Sumatra, W. 65
*Scarborough Shoal, China Sea - - 255
Schiedam I., - - Batavia Road - 103
Schiedam Is., - Celebes Sea 448,468
Schilders Shoal, Lombock, N. - 459
Schoutens I., Van Diemen's Land 497
*Scilly Is., - - - British Channel 532
*Sea Flower's Channel, Sumatra, W. 82
Sabadies, - - - - Ditto Ditto 50
*Se Beeroo I. & Channel, Sumatra, W. 81
†Sebooka Pulo, - Sunda Strait - 94
Secke I, - - - Cochin China - 240
†Se Cockup R. & Strait, Sumatra, W. 84
†Second Bar, - - Canton R. 292, 293
†Second Point, - Banca Strait - 115
†Second Point, - Sunda Strait - 97
Second Reach, - Callam Strait - 171
Secooniet Point, Sumatra, W. - 74
Sedang Bay, - - Borneo, W. - 348
*Sedary Point & Shoal, Java, N. - 450
Sedra Passage, - Achen Is. - - 40
*Seeal Point, - - Ceram, W. - - 487
Seeroodoot Pulo, Sumatra, W. - 53
Seery Pulo, - - Borneo, W. - - 350
*Seeseeran Port, - Luconia, E. - 346
Seetacon Hill, - Chittagong C. - 3

Page.

Segar, - - - - Allass Strait - 461
Se Gere Pulo, - Sumatra, W. - 83
Seirombo R., - - Ditto Ditto - - 79
Se Labba Bay, - Ditto Ditto - 83
Se Leaga I. & Bay, Ditto Ditto - 52
Selema, - - - Ceram, N. - - 487
*Selonda I., - - Sumbawa, N. 448,460
Semanko Bay & Peak, Sumatra, S. 89
Semao I. & Strait, Timor, W. 479, 480
Senaro Pulo, - - Sumatra, W. - 64
Se Ooban Bay, - Ditto Ditto - 83
*Se Pora I. - - Ditto Ditto - 83
*Serangani Is. & Point, Mindanao, S. 378
Serasso Pulo, - Sumatra, W. - 84
Serbette Is. - - Flores Strait - 473
Seriguy I., - - Sunda Strait - 97
Seronda Pulo, - Sumatra, W. 63, 64
Sesson Pulo, - Malacca Strait - 159
*Seven Is., - - - Banca, N. - - 136
†Seven Is., - - - Macassar Strait 370
†Severn's Shoal, - Banca, E. - - 130
*Seyer Is., - - - Bengal Bay - 22, 24
Sey-ho Point, - China, S. - - 257
Shaftsbury Reef, Sumatra, W. - 55
Shahbunder Shoal, Sumatra, E. - 109
Shakbroage Hill, Chittagong - - 3
Shala I., - - - Cochin China - 240
Sha-long-tow, - China, S. - - 302
*Sha-loo-poo-tien Is., Pekin Gulf - 309
Shambles, - - British Chan. 534, 535
†Shanpee Is., - Gillolo, E. - - 419
*Shan-tung Prom. China, E. - - 308
†Sharvogels Is., - Billiton, E - - 359
Shelter I., - - China Sea - - 220
Shittoe Bay & Po. China, S. - - 264
Shoal Point, - - Derwent R. - 496
*Shoal Point, - - Macassar Strait 370
*Shoals, - - - Ditto Ditto 371
†Shoal Water I., - Java Sea - 126, 127
*Shoe I., - - - Billiton, S. - 133, 358
Shoe I., - - - Waygeeooe, N. 422
Shore Rock, - - St. Helena - - 527
Siak R., - - - Sumatra, E. 144, 155
Siam Gulf, - - China Sea - - 222
*Siam R. & Bar, Siam Gulf - - 223
*Siao I, - - - Celebes, N. - - 376
†Siaton Point, - Negroes I. - - 387
Sibago I., - - - Bascelan Strait 383
Siddo Harbour, - Sumatra, W. - 47
Sidney Cove, - Port Jackson - 503
*Sidney Shoal, - S. Pacific Ocean 517
Sig-boye I., - - Sooloo Sea - - 342
Siggen Point, - Sumatra, W. - 75
†Silangin Bay, - Luconia, W. - 323
Silino I., - - - Mindanao, N. - 342
Sillaloo Rock, - Sumatra, W. 74, 75
Sillebar R., - - Ditto Ditto - 71
Simbang Pulo, - Banca, N. - - 132
Simirara Is., - - Mindora, S. - 389
Sincapour I. & Str. Malaya, E. 184, 189, 198
Sincapour Old Str. Johore, - - - 183
Sindangan Bay, - Mindanao, W. - 389
*Single I., - - - China, S. - 296, 297
Sing-shee-moon, Ditto Ditto 280, 281
†Sinkel R., - - Sumatra, W. - 51
Sinkep Pulo, - - Sumatra, E. - 137
Sintodo I. - - - Sapy Strait - - 464
Sipaca Point, - Mindanao, N. - 342
Sipsipa I., - - Waygeeooe, N. 422

Page.

*Sirian River, - - Pegu C. - - - 12
*Sisters, - - - Andamans - - 31
*Sisters, - - - Bass Strait - - 500
†Sisters Peak, - Celebes, N. - - 375
Sitoe Ca., - - Sumatra, W. - 50
Sittang R., - - Martaban - - 16
Sizan Point - - Malacca Strait - 179
Skelton's I. - - Greyhounds Strait 415
†Slackoo Road, - Borneo, W. - - 349
Sliar Pulo, - - Sumatra, E. - 137
Slipper I., - - Bengal Bay - - 27
Slipper I., - - Malacca Strait - 156
Small Bar, - - Canton R. - - 291
†Snares, - - - New Zealand, S. 508
Snug Cove, - - New South Wales 501
Sokum Pulo, - - Sumatra, W. - 52
†Sojoton Point, - Negroes I. - - 387
Solander Point, - New South Wales 502
*Solitary Is., - - Ditto Ditto 508
Soloan I., - - - Mindanao, N. - 342
*Solombo Great, - Java Sea - - 401
Solombo Little, - Ditto Ditto - - 402
*Solomon Is., - S. Pacific Ocean 518, 519
Solon Solon Bay, Luconia, W. - 325
Solor I. & Strait, Timor Sea 470 to 472
*Sombreiro Chan. Nicobars - - 37
†Sombrero Rock, Philippines - - 388
Songi Tanjang Bay, Sumatra, W. - 50
Songy Booloo, - Banca, N. - - 132
Songy Lamo Point, Sumatra, W. 69
Songy Lampoon, Java. N - - - 103
†Songy Leat Bay, Banca, E. - - 131
*Song-yue Point, China, S. - - 259
*Sonrol I., - - - N. Pacific Ocean 438
*Sooloo I., - - - Sooloo Sea 340, 341, 382
Soongey Peenang Bay, Sumatra, W. 65
Soongey Peesang Bay, Ditto Ditto 65
Soon-koo I., - - China, S. - 280, 281
†Soosoo Bay & Town, Sumatra, W. 48, 49
Sootoo Pulo, - - Rhio Strait - - 139
Sorsogon Harbour, Luconia, S. 344, 345
Sound I., - - - Andaman Great 29
*Sourabaya, - - Java, E - - - 452
*Souroutou I., - - Borneo, W. - 356
South Breaker, Fort Marlborough 70
†South Brother, - Dryon Straits - 142
South Ca., - - Formosa - - 332
*South Ca., - - Van Diemen's La. 495
South Channel, - Balabac Straits 339
South Channel, - Sincapour Str. 195, 197
Southeast Harbour, Poggy I. - - 85
Southeast I., - - Madura, E. - - 454
South Head, - - Port Jackson 503, 520
South Head, - - Broken Bay - 505
South I. & Reef, Sincapour Strait 191
*South I., - - - Bouton I. - - 410
South I., - - - Gaspar Streits - 126
*South I., - - - Japan Sea - - 335
†South I., - - - Natunas - - - 216
South I., - - - Pantar Strait - 474
South I., - - - Pulo Laut - - 365
South I., Salayer Straits - - 408, 409
South Sand, - - Malacca Str. 167, 174
*South Watcher, - Java, N. - - - 106
South Woody I., Surigao Bay - 343
Spencer Ca., - - New Guinea, W. 434
Spermonde Archipelago, Celebes, W. 368
Sperry Ledge & Rock, St. Helena 527
Stag's Rocks, - British Channel 533

| | | Page. |
|---|---|---|
| *Stag's Shoal, | China Sea | 317 |
| Start Point, | Ditto Ditto | 533, 534 |
| Staten Land, | Terra del Fuego | 507 |
| Steep Point, | Java, S. | 87 |
| †Stephen's Is. | Pacific Ocean | 436 |
| Stole High Land, | Ceram, N. | 488 |
| Stony Head, Van | Diemen's La. | 497, 500 |
| Stony I., | Achen Head | 40 |
| Storm Bay, | Van Diemen's La. | 496 |
| Stroom Rock, | Sunda Strait | 95 |
| Struy's Bay, | Africa, S. | 526 |
| Stuart's Sound, | Andaman Great | 29 |
| Sual Port, | Luconia, W. | 324 |
| †Subic Bay, | Ditto Ditto | 322 |
| †Succadana, | Borneo, W. | 350 |
| Sugar Loaf, | Bencoolen | 69 |
| Sugar Loaf Hill, | China, S. | 260 |
| Sugar Loaf Hill, | Luconia, S. | 344 |
| Sugar Loaf Hill, | Waygeeobe | 422 |
| Sugar Loaf Point, | St. Helena | 527 |
| Sugar Loaf, | Sumatra, S. | 75 |
| Sugar Loaf, | Tappanooly Bay | 54 |
| Sugud-boyan Bay, | Mindanao, S. | 380 |
| Suilo-shaw, | China, S. | 297 |
| *Sulphur I | N. Pacific Ocean | 442 |
| Sultan's Shoal, | Malacca Str. | 185, 198 |
| Sumatra Bank, | Ditto Ditto | 181 |
| Sumatra, E. | Banca Strait | 110 |
| Sumatra, N. | Malacca Strait | 151 |
| Sumatra, S., | Sunda Strait | 89 |
| Sumatra, W., | Indian Ocean | 39 to 76, 523 |
| *Sumbawa Bay & | Town, Sumbawa I. | 463 |
| Sumbawa I., | Timor Sea | 448, 462 |
| Sunda Strait, | Java, N. | 86, 89 |
| Sun Deep I., | Chittagong C. | 3, 4 |
| Sunkar R., | Ditto Ditto | 2 |
| †Sunken I., | Ava, C. | 10 |
| Sunken Rocks, | China, S. | 298 |
| Sunken Rocks, | Flores Strait | 471 |
| Supaw Pulo, | Sumatra, W. | 84 |
| †Surat Passage, | Achen Head | 40 |
| *Surigao Is. & | Town, Mindanao, N. | 343 |
| Surigao Passage, | Ditto Ditto | 342 |
| Susannah St. I., | Bengal Bay | 23 |
| Saturana Road, | Timor, N. | 478 |
| *Suwarrow's Is., | Pacific Ocean | 522 |
| *Swallow's Rocks, | China Sea | 319 |
| Swangy Pulo, | Banda Is., | 491 |
| Swan Is., | Bass' Strait | 497, 500 |
| *S. W. Cape, | Van Diemen's La. | 494 |
| †S. W. Island, | Natunas | 215 |
| *Swilly Rocks, | Van Diemen's Land | 495 |
| *Syang I., | Gillolo Passage | 420 |
| Sy-cat Rock, | China, S. | 302 |
| Sy-chew Bay, | Hainan, S. | 249 |
| Sy-lock I., | China, S. | 270 |
| Sy-teng, | Ditto Ditto | 302 |

T.

| | | |
|---|---|---|
| †Table Ca., | Van Diemen's La. | 497 |
| Table Hill, | Java, E. | 457 |
| †Table Hill, | Palawan | 321 |
| Table Hill | Rhio Strait | 139 |
| Table I., | Bengal Bay | 27 |
| Table I., | Gaspar Straits | 126 |
| Table Mountain, | China, S. | 267 |
| *Table Point, | Bally I. | 458 |
| *Tabo Point, | Gillolo, E. | 418 |
| Tabtaboon I., | Mindanao, S. | 383 |
| †Tagauac I., | Sooloo Sea | 342 |
| *Taggal & Mountai | Java, N. | 451 |
| †Taggal Rock, | Ditto Ditto | 451 |
| Tagloc Bay, | Mindanao, E. | 380 |
| Tague I., | Cochin China | 238 |
| *Tagolanda I., | Celebes, N. | 376 |
| Tagola Point, | Mindanao, N. | 342 |
| Tagowloo I., | Sooloo Sea | 385 |
| †Tahow Bank, | Ditto Ditto | 342 |
| †Taicou Mountain, | Tsiompa | 231 |
| Tajo R., | Luconia, N. | 326 |
| Takoot Kababawan, | Sooloo Sea | 340 |
| †Takoot Paboonoowan, | Ditto Ditto | 341 |
| Takoot Saanga, | Ditto Ditto | 384 |
| †Talabo Ca., | Celebes, E. | 398 |
| Talenading Is., | Molucca Passage | 381 |
| Talook I., | Sooloo Sea | 341 |
| †Tamarind I., | Sunda Strait | 93 |
| Tambagaan I., | Sooloo Sea | 342 |
| *Tambelan Is., | China Sea | 213 |
| Tambove Road, | Luconia, W. | 324 |
| Tamong Pulo, | Sumatra, W. | 55, 56 |
| *Tamook I., | Sooloo Sea | 385 |
| Tampassook Point, | Borneo, W. | 347 |
| †Tamquan R., | Cochin China | 244 |
| *Tam-quoon-tow I., | China, S. | 281 |
| Tam-too I., | Ditto Ditto | 295 |
| *Tanakeka I. & Shoals, | Celebes, S. | 368, 404 |
| *Tanasserim Is., | Bengal Bay | 16, 18, 22 |
| Tanca Pulo, | Sumatra, W. | 57 |
| Tangala Is., | Java, S. | 88 |
| Tang-lung-chow, | Canton R. | 267 |
| Tangrea, | Sumatra, S. | 92 |
| †Tanjong Apee, | Borneo, W. | 348 |
| Tanjong Awat, | Malacca Strait | 169 |
| Tanjong Bantang, | Rhio Strait | 139 |
| Tanjong Barram, | Borneo, W. | 348 |
| Tanjong Barro, | Sumatra, E. | 145 |
| Tanjong Bassoo, | Sumatra, E. | 141 |
| Tanjong Batoo Pootie, | Sumatra, N. | 151 |
| Tanjong Batoo | Ditto Ditto | 151 |
| Tanjong Beeat | Banca I. | 119, 132 |
| Tanjong Bon, | Sumatra, E. | 141, 146 |
| †Tanjong Boulus, | Malacca Strait | 183, 198 |
| †Tanjong Brekat, | Banca, E. | 128 |
| Tanjong Carrang, | Lombock, W. | 458 |
| Tanjong Chinna, | Sumatra, S. | 76, 89 |
| Tanjong Clin, | Malacca Strait | 176, 199 |
| Tanjong Colean, | Banca Strait | 118, 119 |
| Tanjong Craw, | Ceram, N. | 487 |
| Tanjong Datoo, | Lingin I. | 138 |
| Tanjong Datoo, | Siam Gulf | 221 |
| †Tanjong Dattoo, | Borneo, W. | 348 |
| *Tanjong Eang, | Lingin I., | 137 |
| †Tanjong Factie, | Borneo, W. | 349, 351 |
| *Tanjong Goere, | Sumatra, N. | 153 |
| †Tanjong Goonting, | Banca, N. | 132 |
| Tanjong Inaroontang, | Borneo, N. | 337 |
| Tanjong Kaeton, | Borneo, W. | 347 |
| Tanjong Malaloo, | Banca, N. | 132 |
| †Tanjong Muncooda, | Ditto Ditto | 132 |
| Tanjong Oolar | Banca, W. | 119 |
| Tanjong Ooloor, | Malacca Strait | 163 |
| Tanjong Pooni, | Banca Strait | 118 |
| Tanjong Punyosoo, | Banca, N. | 132 |
| Tanjong Rumbeaah, | Lombock, W. | 458 |
| *Tanjong Ryah, | Banca, E. | 131, 132 |
| *Tanjong Salatan, | Borneo, S. | 364 |
| †Tanjong Sambar, | Borneo, W. | 350, 352 |
| †Tanjong Sampanmangio, | Born., N. | 337, 347 |
| Tanjong Sisor, | Borneo, W. | 348 |
| Tanjong Tekoos, | Sumatra, S. | 90 |
| *Tanjong Toca, | Ditto Ditto | 91 |
| Tanjong Tor, | Malacca Strait | 179 |
| †Tanjong Tuan, | Banca, E. | 132 |
| *Tanjong Tuan, | Malacca Strait | 174 |
| Tanna I., | New Hebrides | 521 |
| Tantalam I., | Siam Gulf | 223 |
| *Tapeantana I. & Chan., | Sooloo Sea | 384 |
| Tapool I., | Ditto Ditto | 341 |
| Tapoos, | Sumatra, W. | 52 |
| *Tappanooly Bay, | Ditto | 53 |
| Tasdugan Inlet, | Philippines | 345 |
| *Tasmans Head, Van | Diemen's Land | 495 |
| Tatas Is., | Pitt's Passage | 425 |
| Ta-thong-moon, | China, S. | 295 |
| Tattaran I., | Sooloo Sea | 384 |
| Tauw I., | Timor Sea | 481 |
| *Tavay I. & Point, | Bengal Bay | 17, 18, 21 |
| Tawally I., | Moluccas | 484 |
| †Tawee-tawee Is., | Sooloo Sea | 341 |
| Taw-ling-saa, | Canton R. | 291 |
| *Taya Is., | China Sea | 251 |
| †Taya Pulo, | Junkseylon | 25 |
| *Taya Pulo, | Sumatra, E. | 136 |
| *Techin-san Is., | China, E. | 308 |
| Teecoos Pulo, | Prince of Wales I. | 160 |
| †Teega Pulo, | Borneo, W. | 347 |
| Teega Pulo, | Sumatra, W. | 60 |
| Teep-chow, | Chiua, S. | 260 |
| †Telibon, | Queda C. | 156 |
| †Tellapoe Road, | Sumatra, W. | 49 |
| Tellore Point, | Ditto Ditto | 66 |
| Tellore Pulo, | Ayer Bongy Bay | 57 |
| †Tellore Pulo, | near Ayer Raja | 66 |
| Tellore Pulo, | near Natal | 54 |
| Teloo Cassee Bay, | Sumatra, W. | 66 |
| Teloor Pulo, | Ditto Ditto | 63 |
| *Temoel Ca., | Macassar Strait | 369 |
| Temontangis Mount. | Sooloo | 341 |
| *Ten-choo-foo, | China, E. | 308 |
| Ten Degrees Chan., | Andamans, S. | 34 |
| *Tenian I., | Marian Is. | 442 |
| *Ten Is., | Sumbawa, W | 461 |
| †Tenth I., | Bass' Strait | 500 |
| *Terceira I., | Azores | 529 |
| Tercoli Pulo, | Rhio Strait | 139 |
| *Ternate I., | Moluccas | 483 |
| Terooa Bay, | Junkseylon | 25 |
| Terra del Fuego, | Patagonia | 506 |
| *Terressa I., | Nicobars | 35 |
| *Terribles, | Aracan C. | 5 |
| †Te-tchong I., | China, E. | 308 |
| *Teynga I., | Sooloo Sea | 386 |
| †Third Point, | Banca Strait | 116 |
| †Third Point, | Sunda Strait | 97 |
| Third Reach, | Callam Strait | 172 |
| Thomas St. R., | Luconia, W. | 324 |
| †Thornhill Ca., | Andaman Great | 28 |
| †Thousand Is., | Java, N. | 106 |
| *Three Alike Is., | Macassar Strait | 366 |
| †Three Bastards, | Flores, N. | 470 |
| Three Brothers, | Amboina | 488 |
| Three Brothers, | Celebes Sea | 405 |
| †Three Brothers, | Dryon Straits | 142 |
| Three Brothers, | Sunda Strait | 91 |
| Three Fathoms Bank, | Java, N. | 450 |

| | | Page. |
|---|---|---|
| Three Friars, | Luconia, W. | 323 |
| Three Hill I., | Mindanao, S. | 378 |
| Three Hummock I., | Bass' Strait | 499 |
| Three Kings, | Cochin China | 240 |
| Three Peaked I., | Palawan | 321 |
| Three Sisters, | Sunda Strait | 108 |
| Threshold Point, | New Guinea | 434 |
| *Thwart the Way, | Sunda Strait | 94 |
| *Ticao I., | Philippines | 344 |
| †Ticoo Is., | Sumatra, W. | 58 |
| Tidong Pulo, | Java, N. | 101 |
| *Tidore I., | Moluccas | 483 |
| †Tieng-fong Rock, | Hainan, S. | 250 |
| *Tien Pak, | China, S. | 257, 259 |
| Tiger I., | Canton R. | 290, 291 |
| Tiger Is., | Celebes Sea | 409 |
| *Tiger I., | Tonking Gulf | 246 |
| Tigers Hook, | Tonking R., | 247 |
| †Tillangchong I., | Nicobars | 37 |
| Tilleroo Ca., | Se Pora I. | 83 |
| *Timoan Pulo, | China Sea | 218, 313 |
| *Timor I., | Timor Sea | 476, 515 |
| *Timor Laut, | Ditto Ditto | 481 |
| *Timor Yung, | Sumbawa, W. | 462 |
| *Ting-hoy Har., | China, E. | 304 |
| †Tingoram, | Malaya, E. | 229 |
| †Tingy Pulo, | China Sea | 216 |
| †Tinhosa False, | Hainan, E. | 251 |
| *Tinhosa I., | Ditto Ditto | 250 |
| Tiphou R., | Cochin China | 244 |
| Tiwoane Ca., | Tsiompa | 230 |
| Toekoekemou I., | Billiton, E. | 360 |
| †Toe-kow Bay, | China, E. | 304 |
| *Token Besseya Is., | Celebes Sea | 412 |
| Tollong-bouang R., | Sumatra, E. | 110 |
| Tolo Bay, | Celebes, E. | 397 |
| Tombs, | Dryon Straits | 142, 145 |
| Tominie Bay, | Celebes, E. | 397 |
| Tongeun High Land, | Hainan, E. | 251 |
| Tong-hou I. & Cove, | China, S. | 275 |
| Tong-ly Fort, | China, E. | 303 |
| Tongo I., | Poggy Is., | 84 |
| Tonier I., | Balambangan | 338 |
| *Tonin Is., | Salayer, S. | 409, 448 |
| Ton-kieou, | Hainan | 250 |
| †Tonking Gulf & R., | Hainan, W. | 246, 247 |
| *Tonyn Is., | Celebes Sea | 404 |
| †Toob Bataha, | Sooloo Sea | 340 |
| *Toojoo Pulo, | Banca, N. | 136 |
| Toojoo Pulo, | Sumatra, W. | 60 |
| †Tooloo Samwoi, | Sumatra, N. | 153 |
| *Tooloo Samwoi Point, | Ditto Ditto | 152 |
| Toolyan Bay, | Sooloo I. | 341, 382 |
| Tooly I., | Sincapour Strait | 183 |
| *Too-nee-ang I., | China, S. | 297 |
| Toong-cat I., | China, S. | 302 |
| Toong-choong, | Ditto Ditto | 274 |
| Toong-teng, | Ditto Ditto | 302 |
| Toon-qua I., | Ditto Ditto | 265 |
| Toon-quoo I., | Ditto Ditto | 275 |
| *Topa del Point, | Azores | 529 |
| Topies, | Rhio Strait | 139 |
| Tor Bay, | England, S. | 533 |
| *Tores Is., | Bengal Bay | 22 |
| *Torres Strait, | New Guinea, S. | 509 to 514 |
| *Toty Pulo, | Banca, N. | 134 |
| Touroumang, | Sumatra, W. | 50 |
| Towa I., | Banda Sea | 488 |
| Tower I., | Flores, S. | 467 |
| Track I., | Nicobars | 37 |
| Traitors Is., | New Guinea | 436 |
| Treacherous Bay, | Billiton, W. | 135 |
| †Tree I. & Bank, | Sumatra, E. | 110 |
| Tree I. | Borneo, W. | 347 |
| *Tree I., | Cheduba | 7 |
| Tree I., | Gaspar Straits | 128 |
| Tree I., | Lingin | 138 |
| †Tree I., | Sincapour Str. | 184, 198 |
| Tree I., | Sumatra, W. | 66 |
| Trees Ca., | Celebes, N. | 370 |
| †Tre I., | Cochin China | 239, 240 |
| †Triamang R., | Sumatra, W. | 68 |
| *Triangles, | Macassar Strait | 367 |
| Trice I., | Nicobars | 37 |
| *Trieste I., | Sumatra, W. | 85 |
| Trincutte I., | Nicobars | 36, 37 |
| †Trinder's Shoal, | Macassar Strait | 368 |
| *Tringany, | Malaya, E. | 221 |
| *Tritons I., | Paracels | 254 |
| Troosan Pulo, | Sumatra, W. | 65 |
| *Trotto Pulo, | Malacca Strait | 156, 157 |
| Trumball I. & Hill, | China, E. | 307 |
| Tsang-chow, | China, S. | 301 |
| Tsincoe I., | Ditto Ditto | 298, 299 |
| Tsiompa C., | Cochin China | 229 |
| Tuft Point, | New Guinea, N. | 435 |
| Talaba Bay & R., | Mindora, W. | 393 |
| Tulean Rock, | Sooloo I., | 341 |
| *Tulour Is., | Mindanao, S. | 378, 380 |
| Tulycaon Road, | Timor, N. | 477 |
| *Tumbora Moun. | Sumbawa, | 449, 463 |
| †Tumpat Tuan Point, | Sumatra, W. | 49 |
| †Turatte Point, | Celebes, S. | 406 |
| †Turks Cap, | Sumatra, W. | 83 |
| Turks Cap, | St. Helena | 527 |
| †Turon Bay & R., | Cochin China | 246 |
| *Turon Ca., | Ditto Ditto | 245 |
| Turret I., | Calamines | 392 |
| Turtle Bay, | New Ireland | 516 |
| Turtle I., | Binkang Bay | 240 |
| Turtle I., | Cochin China | 244 |
| Turtle I., | Madura, E. | 454 |
| *Turtle Is., | Banda Sea | 491 |
| Turtle I., | Torres Strait | 513 |
| Twee-lien-shan, | Macao | 285 |
| Twins, | Allass Strait | 460 |
| Twins, | Andaman Great | 31 |
| *Twins, | China, S. | 259 |
| Twins, | Dryon Straits | 143 |
| †Twins, | Mergui C. | 23 |
| †Two & Half Fa. Ba., | Malac. Str. | 165, 168, 199 |
| *Two Brothers, | Borneo, S. | 365 |
| *Two Brothers, | Malacca Strait | 155 |
| *Two Brothers, | Sumatra, E. | 108 |
| †Twofold Bay, | New South Wales | 501 |
| Two Paps, | Cochin China | 243 |
| †Two Sisters | Luconia, W. | 323 |
| *Ty-ao-yu-su I., | China Sea | 333 |
| †Ty-chook-chow, | China, S. | 259 |
| Ty-cock-tow, | Canton R. | 290 |
| *Ty-foong-kyoh I., | China, S. | 258 |
| Ty-foongs, | China Sea | 262 |
| *Tyfore I., | Moluccas | 381 |
| †Ty-han, | China, S. | 262 |
| Ty-ho, | Ditto Ditto | 273 |
| †Ty-kam I., | Ditto Ditto | 265 |
| Ty-lo-chow, | Ditto Ditto | 270 |
| Ty-lock, | Ditto Ditto | 270 |
| †Ty-loo I., | Ditto Ditto | 266 |
| Ty-lo-so, | Ditto Ditto | 300 |
| Ty-mong I., | Ditto Ditto | 265 |
| Ty-oan Harbour, | Formosa I. | 332 |
| *Ty-oa Point & Bay, | China, S. | 261 |
| †Typa, | Macao Road | 284 |
| *Ty-pin-san I., | China Sea | 333 |
| Ty-poong Har., | China, S. | 298 |
| Ty-sammee, | Ditto Ditto | 302 |
| Ty-sing, | Ditto Ditto | 299 |
| Ty-sing-cham, | Ditto Ditto | 302 |
| *Ty-tam Har & To., | Ditto Ditto | 279, 280 |
| †Ty-wok I., | Ditto Ditto | 262 |

U.

| | | |
|---|---|---|
| Uckoia Channel, | Chittagong C. | 2 |
| *Umatac Bay, | Marian Is. | 442 |
| †Unions Ledge, | Andaman, N. | 28 |
| Unions Shoal, | Macassar Strait | 366, 367 |
| Unsang Peninsula, | Borneo, E. | 341, 374 |
| Upright Point, | New South Wales | 501 |
| †Uracas Is., | Marian Is. | 442 |
| *Urk I., | Kangelang, S. | 454 |
| Urukthapel I., | Pellews | 439 |
| *Ushant Lights, | British Channel | 533 |
| Usuanga Bay, | Mindora, W. | 393 |
| †Utrich Fort, | Bally Strait | 457 |

V

| | | |
|---|---|---|
| Vader Smith's Sh | Batavia Road | 104 |
| Valinasay Point, | Luconia, W. | 324 |
| Valparaiso, | Chili | 507 |
| *Valsche Ca., | New Guinea | 482 |
| Van Diem La. | Southern Oc. | 493 to 500, 520 |
| †Vansittart's Shoal, | Banca, E. | 129 |
| Vansittart's Shoal, | Dampiers Strait | 427 |
| †Vansittart's Shoals, | Java Sea | 126 |
| *Varela Ca., | Cochin China | 241, 311 |
| †Varela False Ca., | Ditto Ditto | 238, 311 |
| †Varela Pulo, | China Sea | 220 |
| Varela Pulo, | Cochin China | 241 |
| *Varela Pulo, | Malacca Strait | 154 |
| †Varela Pulo, | Sumatra, E. | 140, 146 |
| Varela Reef, | Malacca Strait | 154 |
| Varne Shoal, | British Channel | 534, 536 |
| Velas Point, | Azores | 529 |
| *Vele Rete Rocks, | China Sea | 332 |
| *Velthoens I., | Celebes Sea | 413 |
| Verd Cape Is. | Atlantic Ocean | 528 |
| Verlatens I., | Sunda Strait | 93 |
| *Victoria Fort, | Amboina | 488 |
| *Victory I., | China Sea | 214 |
| †Vigio, | Ditto Ditto | 237 |
| Vinay Point, | Tsiompa | 231 |
| *Vincent St Point, | Van Diem. Land | 494 |
| *Vincent St. Port, | New Caledonia | 518 |
| Vicente San Port & I., | Luconia, N. | 326 |
| Vogels Is., | Malacca Strait | 156 |
| *Volcano I., | Pacific Ocean | 521 |
| Volcano Mounts., | Sumatra, W. | 37, 66, 67 |
| *Vuladores Shoal, | Paracels | 253 |
| Vung Chao Har., | Cochin China | 242 |
| Vung Gang, | Ditto Ditto | 238 |
| Vung-la Cove, | Ditto Ditto | 242 |
| Vung-lam Har., | Ditto Ditto | 242 |
| Vung-mon Bay & Point, | Ditto Ditto | 242 |
| Vung-trich Point, | Ditto Ditto | 242 |

| | | Page. |
|---|---|---|
| *Wag-lan, | China, S. | 280,281 |
| *Waller's Shoals, | Celebes Sea | 367 |
| Wallis I., | New Ireland | 516 |
| *Walpole's I., | S. Pacific Ocean | 521 |
| *Wamvax I., | Torres Strait | 510 |
| Wan-chun-chow, | China, S. | 296 |
| Wangiwangi I., | Token Besseys | 412 |
| Wang-tong I., | Canton R. | 299 |
| Wapen I., | Java, N. | 101 |
| †Warning Mount, | New South Wales | 508 |
| *Waroo Bay, | Ceram, N. | 487 |
| Warren Hast. Shoal, | Gaspar Straits | 129 |
| *Watcher, North, | Java Sea | 107 |
| †Watcher, North, | Macassar Strait | 370 |
| *Watcher, South, | Java Sea | 106 |
| Watcher, South, | Macassar Strait | 369 |
| Water Bay, | Sapy Strait | 465 |
| *Waterhouse. I. & | Point, Bass' Strait | 500 |
| Watering Bay, | China, S. | 263 |
| Watering I, | Sincapour Strait | 190 |
| Water Is., | China, S. | 266 |
| †Water Is., | Cochin-China | 239,311 |
| Water Is., | Malacca Road | 178 |
| Water Point, | Java, E. | 457 |
| *Waxway I., | Celebes, E. | 412 |
| *Waygeeooe I., | Gillolo, E | 417,422,428 |
| Way Pulo, | Achen Is. | 39 |
| Way Pulo, | Banda Is. | 491 |
| †Way Pulo, | Siam Gulf | 224 |
| *Wednesday I., | Torres Strait | 511,512 |
| †Weeda Is., | Gillolo, E. | 418 |
| Weetang I., | Timor Sea | 481 |
| †Welcome Bay, | Sunda Strait | 93,97 |
| *West Ca., | Van Diemen's L. | 494 |
| West Danger I., | Pacific Ocean | 522 |
| Western Channel, | Banca Strait | 112 |
| Western I., | Engano Bay | 86 |
| West I., | Andaman Great | 28 |
| West I., | Flores, W. | 466 |
| †West I., | Java Sea | 106 |
| West I., | Moluccas | 485 |
| *West I., | Natunas | 216 |
| *West London Reef, | China Sea | 317 |
| *Wetter I., | Timor Sea | 475 |
| Weymouth Ca., | New South Wales | 514 |
| Weywongy I., | Moluccas | 412 |
| Whale Rock., | Sumatra, W. | 60 |
| Whale, | Salayer, W. | 408 |
| Whale's Crown, | Sincapour Strait | 191 |
| †Whampoa Anchorage, | Canton R. | 294 |
| Whelps, | China, E. | 305 |
| White Rock, | Banca Strait | 116 |
| White Rock, | Java Sea | 359 |
| †White Rock, | Panay, W. | 389 |
| White Sandy Cliffs, | Aracan | 1 |
| †White Rocks, | China, S. | 277 |
| White Rock, | Sumatra, W. | 49 |
| *White Rock, | Van Diemen's L. | 495 |
| Widemouth Shoal, | British Channel | 535 |
| Wight I., | Ditto Ditto | 535 |
| William's Bay, | Damme I. | 481 |
| *William Ca., | Celebes, W. | 369 |
| Willington Mill, | England, S. | 535 |
| †Wilson Ca., | New Guinea, N. | 435 |
| Winchelsea's I., | S. Pacific Oc. | 515,519 |
| *Wizard Rocks, | China, S. | 265 |
| Wo-chow, | China, S. | 293 |
| Woerden Castle Rock, | Java, N. | 450 |
| *Wolf Rock, | Moluccas | 484 |
| *Woody I., | China Sea | 252 |
| Woody Is., | Mindanao, N. | 343 |
| Woody I., | Sumatra, S. | 92 |
| Woong-moo I., | China, S. | 270 |
| Woong-mow I., | Ditto | 300 |
| *Wreck Reef, | S.Pac.Oc. | 509,510,514 |
| Wright's Rock, | Bass' Strait | 500 |
| *Wy-caup I., | China, S. | 265 |


X.


| | | |
|---|---|---|
| Xuan-dai Harbour, | Cochin-China | 242 |
| *Xulla Bessey I., | Moluccas | 414 |
| Xulla Mangola I., | Ditto | 397,415 |
| Xulla Talyabo I., | Ditto | 397,415 |


Y.


| | | |
|---|---|---|
| Ya-chow, | China, S. | 281 |
| †Yait-chew Bay & | Town, Hainan | 248 |
| *Yap I., | Pacific Ocean | 441 |
| Yat-moon, | China, S. | 281 |
| Yellow Sea, | China, E. | 309 |
| *Ylin Is., | Mindora, S. | 390 |
| Yloylo, | Panay I. | 388 |
| York Breakers, | Palawan, W. | 321 |
| York Ca., Endeavours Str. | | 508,513to515 |
| *York Is. | Ditto | 511 to 515 |
| *Yowl Is. | Waygeeooe, N. | 423 |
| Ysaroe Mountain, | Luconia, E. | 346 |
| Yue-tong, | China, S. | 259 |
| Yu-lin-kan Bay, | Hainan | 249 |


Z.


| | | |
|---|---|---|
| *Zalinaf I., | Celebes Sea | 402 |
| Zamanap, | Madura, E. | 464 |
| Zealand New, | S. Pacific Oc. | 507,508 |
| Zee Klip, | Sunda Strait | 94, 124 |
| Zelody Is. | Sumatra, W. | 54 |
| Zemanro Gut, | Solor Strait | 473 |
| *Zeu-oo-tau Ca., | China, E. | 308 |
| Zidaya, | Java, E. | 452 |
| †Zutphen Is., | Sunda Strait | 91, 100 |


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# SUPPLEMENT

TO THE

# India Sailing Directory;

OR A DESCRIPTION OF

# NEW DISCOVERIES AND DANGERS,

WITH

## *CORRESPONDING REMARKS,*

AND

# Additional Instructions

FOR THE

# ORIENTAL NAVIGATION.

BY

*JAMES HORSBURGH, F.R.S.*

HYDROGRAPHER TO THE HONORABLE EAST INDIA COMPANY.

They that go down to the sea in ships, that do business in great waters; these see the works of the Lord, and his wonders in the deep. PSALM CVII. v. 23, 24.

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# CONTENTS.


Page

South Africa, Bays and Rivers;—Directions for Mathewren Bay, Island Roderigue;—Coringa Bay Anchorage, Malacca Lighthouse, and Bambek Shoal .. .. .. .. 1

Directions to accompany the Chart of Canton River, from the Anchorage below the Second Bar to Whampoa Reach, shewing the Dangers of the Second Bar, First Bar, and Brunswick Rock, with Marks to avoid them .. .. .. .. .. .. .. 4

Directions for the South Coast of China Eastward of Pedro Branco, by Lieut. D. Ross .. 6

Yellow Sea, and Gulf of Pe-tche-lee .. .. .. .. .. .. .. .. 11

South Coast of Formosa, adjacent Islands and Dangers .. .. .. .. .. 16

New Discoveries in the Straits of Gaspar, S. E. part of Banca, to the Westward of Souroutou, among the Molucca Islands;—Passage through Torres Strait, and N. W. Cape of New Holland .. .. .. .. .. .. .. .. .. .. 18

# SUPPLEMENT.

## *SOUTH AFRICA, BAYS and RIVERS; — DIRECTIONS for MATHEWREN BAY, ISLAND RODERIGUE, CORINGA BAY ANCHORAGE, MALACCA LIGHTHOUSE, and BAMBEK SHOAL.*

Saldanha Bay.

SALDANHA BAY, in the vicinity of the Cape of Good Hope, although forming a spacious and safe harbour for any number of ships, has hitherto been of little benefit to navigation, for want of wood and fresh water. But Capt. James Callander, who has examined most of the bays and rivers in South Africa, and already rendered essential service to the navigation and coasting trade of the Cape Colony, observes, that the Berg River, being contiguous to Saldanha Bay, could be turned down into it at a small expense, by which, not only shipping and a town could be supplied, but several thousands of acres of land cultivated, and plantations formed.

St. Sebastian Bay, and Infanta River.

ST. SEBASTIAN BAY, situated on the N. E. side of Cape Infanta, affords good anchorage and shelter from Westerly winds; and the Beach consisting of sand, is bold to approach to the westward of Infanta River. This river, called also Broad River, has only 9 feet on the Bar at high water, but inside it is capable of containing any number of vessels, at a proper draught to pass over the bar; and, as it is situated in the centre of the richest corn district of the Cape Colony, with proper attention and encouragement, it may become a place of great importance to the Colony.

Flat Mountain.

Inland from Cape Infanta, to the northward, stands a Flat Mountain, which, in some views, much resembles the Table Mountain at Cape Town, and requires the attention of Navigators in passing to the Westward, as the unfortunate loss of the Arniston, in Struy's Bay, is attributed to those on board having mistaken the former mountain for the latter.

Nysna River,

NYSNA RIVER,* situated to the Westward of Plettemberg Bay, was lately entered by H. M. S. Podargus, Capt. Wallis, who describes it as follows.

* The advantages of this river, or inlet of the sea, to the Cape Colony, were first pointed out by Capt. James Callander.

described by Capt. Wallis.

On the evening of the 20th of April 1817, we arrived off the mouth of the Nysna River, but the tide being unfavourable were obliged to haul off. The following day was calm;—early on the 22d we closed with the river, but the tide not serving, anchored in the fair way, which afforded an opportunity of sounding. When the flood made, (being neap tides) we weighed and entered the river with great ease, having never less than 20 feet water, the Podargus drawing only about 13 feet. Any vessel under 15 feet, attending to the tide, might run for this river with safety, which is 288 yards wide at the only dangerous part; the tide rises about 7 feet at full and change of the moon, and runs about 3 knots.

When the Podargus entered the river, the neighbouring inhabitants were assembled on the heights of the entrance, headed by Mr. Rex.

From the local situation of this river, the safety it affords inside to any number of ships, and the facility of loading them, Capt. Wallis thinks, will render it of great importance to the Colony.

Mathewren Bay described.

MATHEWREN BAY, in the ISLAND RODERIGUE, has been surveyed by Lieut. J. H. Grubb, of the Company's Marine, who has constructed a Plan of it, with the following remarks and Directions for the Channels.

This Bay or Harbour is in general good holding ground, free from rocks, the bottom being a mixture of sand and mud. The tide rises about 6 feet, high water at 1¾ hour on full and change of the moon, the flood runs to the Eastward and the ebb to the Westward. Variation 10° West in 1810:—at which time, there were only three French families on the Island, and about 40 slaves.

There are two channels for entering or leaving the harbour, the Eastern one being only about 250 yards in breadth, renders it very intricate for large ships, and therefore requires great attention to the Directions given for sailing through it. The Western or leeward channel is free from danger being about ¼ mile in breadth, formed by a small shoal of 2¾ fathoms on the edge of the middle ground, and a rocky patch of 3½ fathoms to the Westward; this channel being far to leeward, should only be used by ships going out of the harbour. There is another channel over the middle ground, of the same breadth, which was used for bringing in ships previous to the survey of the harbour, but often attended with danger, by violent gusts of wind descending from the valleys and making a ship liable to miss stays when near the reef, where she might be on the rocks before the anchor could bring her up. Ships, therefore, should always go in by the Eastern channel, and out by the Western one.

To sail in by the Eastern Channel.

To sail into the harbour through the Eastern channel, after making the East or N. E. part of the Island, you may stand in shore until within 1½ mile of the reef, and coast along it at this distance till you see Booby Island, which bring to bear W. ¾ S. by compass, and steer towards it with this bearing, keeping a good look out for the Peak, which will bear about S. S. W. ¼ W. when first seen. Continue to steer for Booby Island till the Peak bears S. b. W. ¾ W. or about two ships lengths to the Eastward of the White Rock, (so called from being whitened to show more plain as a mark) Diamond Island will then be just touching Diamond Point, and you will be at the entrance of the channel, having the Peak S. b. W. ¾ W. and Booby Island W. ¾ S. Steer in W. b. S. ½ S. until the Peak and White Rock are in one, (observing not to open Diamond Island with the Point) then haul up S. W. ¼ W. or S. W., keeping a good look out on the larboard bow, for a shoal of

2¼ fathoms, which can generally be seen, and when Diamond Island is open with Diamond Point, you are within the shoals, and may run down to the Westward and anchor in 12 fathoms, sand and mud, with the Peak bearing from S. ¼ W. to S. ¼ E., and Diamond Island between two hummocks near the Point, which will be found the most convenient anchorage for watering.

To sail out by the Western channel.

To sail out of the harbour by the Western channel;—after weighing the anchor, get the ship's head round to W. N. W., and run in that direction till the Peak bears S. b. E. nearly, then haul up N. b. W. or N. ½ W., attending to the set of the tide, so as to keep the Peak bearing S. 10° E. by compass; and when the N. E. point of the Island is open with the East point of the Bay, you are clear of all the shoals, and will have 16 or 17 fathoms water.

Hurricanes.

Hurricanes are liable to happen here, from the beginning of November till the end of March, and in some years there are two, but generally only one, and sometimes none: they blow with great violence, commencing from Southward, and veering round to East, N. E., and N. W., where they gradually decrease after continuing about 36 hours.

When at anchor in the Bay, the approach of these hurricanes may be known without the assistance of a barometer, by the darkness of the atmosphere, rising of the water above its usual level, and the hollow roaring of the breakers on the reef and shoals, and they generally give about 24 hours warning.

Coringa Flagstaff and anchorage.

CORINGA BAY has recently received an improvement in navigation, by the erection of a new Flagstaff Lighthouse, on Hope Island, to guide ships to the anchorage in that Bay.

The Company's Ships should anchor with the Flagstaff on Hope Island bearing S. b. E., Jaggernautporam two pagodas wide open, the centre of them N. W. b. W. large house at Coringa S. W. ½ S., where they will have ¼ less 5 fathoms at low water, soft ground. Or they may anchor in ¼ less 6 fathoms at low water, with the Flagstaff on Hope Island, bearing S. ¾ E., Jaggernautporam two pagodas wide open, the centre N. W. b. W. ½ W., large house at Coringa S. W. ½ S. a little southerly, and Coringa River's mouth wide open S. W.

Ships of 500 to 600 tons, may bring the Flagstaff on Hope Island to bear S. S. E., Jaggernautporam two pagodas N. W. b. W. well open, and the great house at Coringa S. S. W. ½ W., the mouth of Coringa River S. W. ½ S. well open, in 4 fathoms at low water, soft ground.

Malacca Lighthouse and bearings.

MALACCA LIGHTHOUSE, is 146 feet above the level of the sea, from which Tanjong Clin bears W. 10° N., outer extreme of Fishers Island W. 5° S., extremes of the shoal off Fishers Island W. 14° N. to W. 18° N., small Rocky Reef off the West end of Pulo Java (or Red Island) S. 5° W., West extreme of Pulo Java South, body of Outer Water Island S. 29° E., anchorage in the Road from S. 48° W. to S. 64° W.

Bambek Shoal.

BAMBEK SHOAL, situated in the bight between Cape Rachado and Parcelar Point, should be carefully avoided, as several ships have been wrecked on it. The Caroline, a strong Bombay-built ship, bound from Bengal to Canton River in 1816, got upon this shoal, and was wrecked, with Cape Rachado bearing E. 35° S., Parcelar Hill W. 43° N., and Parcelar Point W. 36° N.

## *DIRECTIONS to accompany the CHART of CANTON RIVER, from the ANCHORAGE below the SECOND BAR to WHAMPOA REACH,* shewing the DANGERS of the SECOND BAR, FIRST BAR, and BRUNSWICK ROCK, with MARKS to AVOID THEM.*

Directions for the upper part of Canton River.

SHIPS proceeding up the river in the N. E. monsoon, or with a weather tide, if drawing much water, should be under weigh by the last $\frac{1}{4}$ flood, to save tide across the Bar, for the passage between the Knowls being very narrow, they must back and fill through :—if their draught of water be moderate, they may weigh much earlier. The difficulty in crossing the 2d Bar, is in ascertaining correctly the two Knowls A and B, on each of which a boat must be placed, for nature affords here no marks, excepting such as are too far distant to be of the least utility.

To find the Knowl B, a boat (provided with a lead) should pull directly out from the upper point of 2d Bar creek, making allowance for the tide, so as to keep the boat in a direct line across the river. In crossing the river she will have 4, $4\frac{1}{2}$, then $3\frac{1}{2}$ and 3 fathoms, immediately after which she will cast upon the Knowl in 2 and $2\frac{1}{2}$ fathoms. From thence to find the Knowl A, she should pull across the channel in a N. E. direction, so as to fetch above the fishing stakes, and directly in a line with the first small creek above 2d Bar creek, and in crossing the channel she will have $3\frac{1}{2}$ fathoms. The fishing stakes are sometimes removed, but by steering direct for the small creek a boat can hardly fail sounding on the Knowl A, or should she miss it, let her pull direct in shore again from the Knowl B, for the upper point of 2d Bar creek, until she get a cast of 4 fathoms, then by pulling up along shore, keeping as nearly as possible at the same distance from it, she will soon sound on Knowl A. in 2 and $2\frac{1}{2}$ fathoms. It is best to place the boats on the Knowls at the first of the flood, but by marking the comparative depths of water, a careful officer may at all times of tide place his boats on these Knowls. The ship must pass between the boats, taking care to keep tolerably near to the upper boat in passing it, which is the narrowest and most dangerous part of the Bar. After passing the upper boat, the course inclines very little to the Westward of a line parallel to the shore. Crossing the bar in this manner, you will not have less than $4\frac{1}{4}$ fathoms, at three quarters flood. When the large pagoda bears W. N. W. the worst part of the Bar is crossed, and when it bears W. b. N. you will be over it; but the water continues shoal for a little distance farther, and is frequently the cause of alarm to those who are unacquainted. In proceeding up the River, after the pagoda bears W. b. N. the ground is soft and loose, unlike that on the Bar, which is in parts hard and stony. The pagoda bearing West, is the mark for anchoring if bound down the River, and waiting for water to cross the Bar. Large ships should not bring it to bear to the Northward of West before they anchor. The channel here begins to widen, but the tail of the 2d Bar shoal extends some distance further up :—the mark for passing it, is the large pagoda just shut in with the South end of the wall

* This excellent Survey of part of the River mentioned above, was executed in 1816, by Messrs. Newell and Auber, officers in the Company's service. The basis of the Chart, was the admeasurement of several base lines, performed with great accuracy. The Soundings were taken at low water, spring tides, the perpendicular rise of the tides being then 10 feet.

of an old fort, which stands near it; and in coming down the River, when the pagoda is observed just opening to the Southward of the wall, the ship is passing the tail of the sand and must keep towards the East shore. Large boats in watering, should be careful (if they do not leave the watering place near the pagoda before the ebb makes) not to ground on that part of the shoal which is dry at low water, as at X. This may be avoided by keeping right across the River, (making allowance for the tide) until nearly half over, before they steer direct for the shipping below the Bar. After passing above the 2d Bar shoal, the River is clear from side to side, but the deepest water is near the East shore, and ships with a leading wind generally keep it close aboard until they approach the 1st Bar. Whampoa pagoda observed just on with the Northermost clump or hill, on Danes Island, appearing as at No. 1, sketch A, shows the approach to the lower shoal of the 1st Bar, you must then haul out into the middle of the River to avoid it, as it projects a little distance from the starboard shore, and is nearly opposite to a chop house, surrounded with a cluster of trees. The marks for the shoalest part of the lower shoal are, the clump of trees surrounding the chop house just in the gap of Saddle Hill, and Whampoa pagoda in the gap on Danes Island, and appearing as at No. 2 sketch A:—on this part there is only 12 feet at low water. The mark to clear this shoal, is Whampoa pagoda kept on the declivity of the large hill on Danes Island as at No. 3, sketch A. When the chop house bears S. S. W. haul over to the starboard shore to avoid the upper shoal of 1st Bar:—the mark for leading into the channel clear of this shoal, is the 2d Bar small pagoda kept open to the eastward of the clump of trees surrounding the chop house. The shoal lies nearly in the middle of the River, and has 3 fathoms close to it at low water. The channel is deep, close in shore, and being narrow, you must back and fill through, except there be a leading wind. Ships bound down the river, frequently warp over the flood through this passage. The shore towards the 1st Bar point must be kept close aboard, until Whampoa pagoda is seen clear open of all the land on the opposite or South shore, right up;—then you may haul over without fear of the upper end of the shoal, which is dry at low water, and steer for the passage to clear the Brunswick Rock, by keeping the North shore pagoda on with the left declivity of Moffat Hill, and appearing as at No. 4. sketch B. This mark will carry you between Brunswick Rock and a Small Stone or Rock, situated to the Southward and Eastward of it, which has 17 feet on it at low water. The North shore pagoda stands on the starboard side of the river at the upper part of the reach, and will be easily discerned over Moffat Hill. Brunswick Rock extends considerably, with gaps of uneven soundings; the marks for the shoalest part, are, the North shore pagoda on with the right declivity of Moffat Hill, appearing as at No. 5. sketch B, and a large conspicuous house which stands on the North shore on the starboard side of Hill V.:—when this house is on with Hill No. VI. you will be clear of all danger, and may steer boldly up for Whampoa Reach, keeping near to the starboard shore. The Hills IV., V., VI., are easily discerned in coming up or down the river:—the two marked IV., V. are much smaller than the other, and appear of a dusky red colour. The Hill No. VI. is mostly covered with trees.* The same marks must be observed in

* Drawings of these hills, &c. were taken some time since by Capt. Moffat, who accompanied them with directions, to which we are much indebted for the assistance they afforded us in laying down the above dangers.

coming down the river to avoid these dangers, and in this case it will be easily perceived, that the large house on the north shore on with Hill No. VI. indicates the approach to the Brunswick Rock, as the same house on with Hill No. IV. does when proceeding up the river.

Entering Whampoa Reach, the river is clear on both sides, although the South shore, or that of Danes Island is generally preferred; but care should be taken not to anchor a little above Danes Island pagoda, as several ships have lost their anchors in this place. The Chinese fishermen describe it as a shoal of rocks, covered by a body of sand. There are 7 and 7¼ fathoms in this place at low water. The cross bearings for it, are, the North shore pagoda N. b. E. ¾ E., Danes Island pagoda S. S. E. ¾ E., Tree pagoda W. b. N. ¾ N.

In proceeding up or down the river, care must be taken to give a wide birth to a spit of sand situated in the middle of the entrance of Junk River, on which there is only 9 and 10 feet at low water, spring tides. There are 4, 5, and 6 fathoms within a very short distance of this shoal;—the cross bearings are, Tree pagoda W. N. W., North shore pagoda N. E. The mark for clearing it, is the south extremity of the hills on the starboard side of the river at the upper end of the reach, clear open of all the land of Whampoa Island. The next danger to be avoided is a cluster of rocks near to the East point of the entrance of French River, on which the Henry Addington struck in 1814;—they are totally covered at half flood, and there are 4½ and 5 fathoms close to them. The mark for clearing these rocks is a remarkably round hill at the upper part of the reach, kept well open of French Island:—this hill is very conspicuous, and is the northernmost of the hills on the larboard or South shore. The entrance of French River is shoal, and should not be approached at ½ ebb nearer than pointed out by this mark. After passing French River, the water deepens to 6 and 7 fathoms, and there is 4 and 4½ fathoms close in to the South shore; but you must be careful not to moor near a bank formed over the wreck of a French ship, that was burnt to the water's edge nearly 40 years ago, which has 5 and 6 fathoms close to, and only 16 and 17 feet over it at low water. Light ships may swing over it, but as they deepen by taking in cargo, they will hang upon it, which the Earl Spencer did in 1814; and some anchors have been lost by hooking this wreck. The bearings for it are Tree pagoda N. b. E., Whampoa pagoda N. W. ¼ N.

## *DIRECTIONS for the SOUTH COAST of CHINA, EASTWARD of PEDRO BRANCO, by Lieut. D. ROSS.*

Pedro Branco.

PEDRO BRANCO,* or Ty-sing-cham of the Chinese, is a high rock in lat. 22° 19½′ N. lon. 115° 7¾′ E. bearing from Fokai Point, the Eastern extreme of Harlem's Bay, S 42° E. distant 19 miles, and seems to have no dangers detached from it. In

* The longitude of this rock was determined by a series of triangles from Macao, and repeatedly examined by good chronometers: its position has also been given in Vol. II. page 302 of the India Directory; the soundings about it are from 19 to 24 fathoms, the latter to the Southward.

the night, when bound from Pedro Branco towards Macao, 18 or 19 fathoms is the best track for the Lema Channel.

White Rock of former charts, or Pauk Pyah of the Chinese is round, of moderate height, flat at the top, bearing from Pedro Branco N. 21½° W. distant 15¼ miles, and about 1½ or 2 miles to the S. S. W. of it, lies a sunken rock, shewing only breakers when there is a high sea. If obliged to pass in shore, either go to the Northward of the White Rock, or at least 3 miles to the Southward: the depth about this part is 11 or 12 fathoms. Fokai Point bears from Pauk Pyah nearly West, distant 7¾ miles. About 6 miles to the N. N. E. of it lie two sharp rocks above water, distant 1½ mile N. N. W. and S. S. E. from each other; between them, and also close round the Southern rock, found not less than 9 or 10 fathoms; but a short distance to the north and N. E. of them, breakers were visible when the sea was high. Pauk Pyah.

Distant 10 leagues about N. N. E. from Pedro Branco, in lat. 22° 36½′ N. on the Western side of the high land which forms Kennagoo Western Point, there is an inlet affording shelter to many boats, which convey salt to Macao. The Antelope entered this port, and anchored in 5 fathoms close to a sandy point on the starboard side abreast of the town, where we found the anchorage very confined, and the entrance shoal some distance off, having only 3¼ fathoms at high water: a reef of rocks also extends nearly 2 miles to the westward, off the Southern side of the entrance. The town is called Ty-sammee.

SHALONG-TOW, (or Kennagoo Eastern Point, by Mr. Dalrymple) in lat. 22° 39½′ N. lon. 115° 35½′ E. is very remarkable, of moderate height, formed by red sand, and many rugged rocks scattered over it. At a little distance on the Western side of the point there is a small battery, many of which are seen along this coast and no doubt were intended to protect the fishing boats during the time of the pirates. The land to the Westward of Shalong-tow is mountainous, and forms several small Bays with beaches; it extends 11 miles in a W. b. N. direction, to a high bluff point, which was named by Mr. Dalrymple, Kennagoo West Point. About 5 miles to the W. b. S. of Shalong-tow Point, lies a cluster of rocks above water, and about 3 miles to the N. W. of the latter, there is another cluster: close round the first of them we had 10 fathoms on a mud bottom; but several others are detached between these rocks and the shore, which render the passage between the two clusters of rocks unsafe. If proceeding from this point to the Westward in the night, by preserving 16 fathoms water, you will pass between Pauk Pyah and Pedro Branco in mid-channel: the latter bears from Shalong-tow S. W. ½ W. distant 32½ miles. Shalong-tow.

TENGMEE* in lat. 22° 45′ lon. 115° 50′ E. is a high point of land bearing E. N. E. from Shalong-tow distant 15 miles, and forms the Eastern point of the Great Bay called Hie-che-tchin Bay; the Western one being formed by Shalong-tow. On the West side of this Bay, about 4¼ miles to the N. E. b. N. of Shalong-tow, there is a remarkable little rocky island, named Kimsue or Kemsue, between which and the land to the Westward, we found a safe channel of 7 and 8 fathoms water: hereabout, is good anchorage for a ship, if merely waiting for a Westerly or S. Westerly gale to blow over. About 1¼ mile to the N. N. W. of Kemsue lies a cluster of rocks, between Geo. site of Teng-mee.

* Called so by the fishermen.

which and the island we found 6 and 7 fathoms water, and a short distance to the Northward of the rocks, there is a projecting point of land of moderate height, with numerous rocks scattered over its surface: this forms the Southern point of a little
Passaó Point. bay and port which lies farther to the Westward, and it is called Passaó, or Pauk sha-oo Point, that being the name of the little Bay situated between it and another high point having a battery on it; all the sides of this Bay are formed by sand hills. Between the Battery Point and the high land to the Northward, there is an opening into a deep harbour, which is to the Westward: the entrance of this is nearly barred by rocks, and the harbour too shoal for any vessels drawing above 8 feet water; but between the battery and Passaó Points we anchored in 3 and 3¼ fathoms in the Discovery several times, when it was blowing strong from Southward. Saw no danger hereabout, excepting a little rock, which is under water, and distant about 100 yards to the N. E. of Passaó Point. The bottom of the great Bay is 11½ miles from the bearing line of the two extreme points, and is formed of low land with a sandy beach; near the Eastern part of this beach there is a small branch of a river or creek, and the country, when viewed from an elevation, appeared populous and well cultivated. The Eastern side of the Great Bay is formed by high mountainous land, and
Teng-mee Point. about 5 miles within Teng-mee Point, there are several white rocks detached a little from the shore: near to these rocks we anchored in the Discovery, when twice compelled to ride out heavy Easterly gales, but found it very unpleasant riding, owing to a heavy sea rolling in from the Southward

A short distance to the westward of Teng-mee Point there is a fort, and a squadron of war boats is stationed in the little Bay there, called by the fishermen Chinó: these boats are obliged to run over to the shoal harbour on the western side, whenever the wind blows strong.

The soundings all over the Great Bay are very regular, under 12 fathoms gradually decreasing from across the entrance, to the shores within; the bottom is soft mud, excepting just within Teng-mee Point, where it is rocky for a little way, and should not be passed at less than a mile from the land. There are two remarkable white rocks situated to the Southward of Teng-mee Point; one lies 3 miles to the S. W. of it, and the other about a mile to the S. S. E.; the first is called Sy-cat and the other Toong-cat; around Sy-cat, had 11 and 12 fathoms water. The Investigator passed between Toong-cat and a reef which projects from the shore, in 10 fathoms water.

Geo. site of Cup-chee-san. CUP-CHEE-SAN. In lat. 22° 49½′ N. lon. 116° 7½′ E. is a broken point of land, very rocky, and has several detached rocks lying 1½ mile to the Southward: this point bears from Teng-mee Point E. b. N. ¼ N. distant 17 miles, and about half way between them there is a cluster of rocks a little detached from the shore. Opposite to the rocks lies the entrance into a small river or creek, with a tower which the Chinese named Oo-tong; there were numerous fishing boats up this river. Close to the Westward of Cup-chee-san (or Shan) there is another small branch of a river; from the ship we could see the walls of Cup-chee City, and 2 or 3 tall pagodas a little way up. This appears a place of consequence, as several junks masts were seen, and numerous other smaller vessels; but it does not afford any shelter for European vessels. Close in to the forts which defend the entrance of the river, the water is very shoal, and the entrance narrow; it must, therefore, be only at high water, the

junks can pass in or out: there are also some detached rocks abont the Bay. In passing between Tong-mee Point and Cup-chee, soundings of 9 and 10 fathoms were very regular at 3 miles distance from the shore; and close to the detached rocks off the latter point had 11 and 12 fathoms water.

Remarkable little black conical Mount, in lat. 22° 52½′ lon. 116° 11′ E. about 4½ miles to the N. E. of Cup-chee Point, is situated a little way from the beach, and on a down of red sand. Geo. site of Black Mount.

BREAKER POINT, in lat. 22° 56¾′ N. lon. 116° 31½′ E. is low and rocky, having within it some hummocks of black rocks and red sand. From this point, the coast begins to trend more Northerly, and ships when passing it, should keep about 2 miles off, as the ground near it is in some parts foul. Breaker Point bears from Cup-chee Point N. 70° 30′ E. distant 23 miles; in the bottom of a bay about mid-way between them, lies a large town, with 2 tall pagodas on the hills, where numerous fishing vessels were seen in a creek or inlet near the town. From Cup-chee point direct towards Breaker Point, we had very regular soundings of 10 and 11 fathoms; and in passing round the great Bay had 7 and 8 fathoms. Between the Black Mount and the town, is one continued high sandy beach: a short distance on both sides of Breaker Point there are small batteries; and in a little bay, 4 miles to the N. E. there is an inlet or creek, as well as a walled town, which the Fishermen named Ching-hai, or Hoi. Geo. site of Breaker Point.

CAPE OF GOOD HOPE (of the old Charts). In lat. 23°. 13¾′ N. lon. 116° 50′ E. bearing from Breaker Point N. 43¼° E. distant 8 leagues, is of moderate height, and has near to it 11 and 12 fathoms water. About 8 miles to the W. S. W. of it there is a high projecting point of the coast, having a few rocks about ¼ mile off it, and the hill itself is very rocky. Close to the westward of the point lies the entrance of a small river or inlet, which the Chinese fishermen named Hai-mun or Hai-moon, and on the right side, we saw the walls of a city: this is the third place from Macao where the Chinese have a few war boats stationed. In passing from Breaker Point along the shore Northward, at the distance of a mile in some places, and at others about 2 miles off, had very regular soundings from 14 fathoms, gradually decreasing to 9 fathoms off Hai-mun Point. The coast to the Eastward of the Cape of Good Hope trends to the North and N. N. W., and soon becomes so low as not to be visible at a few leagues distance; but there are high mountains in the interior. Geo. site of Cape of Good Hope.

Nearly North from the Cape of Good Hope, there is a small round island with a tall pagoda on it in lat. 23° 26¼′ N. and 2½ miles farther Eastward there is another irregular shaped island with a fort on it. Between the last island and the Western point of Lamo Island is the Western entrance of a Strait, through which numerous coasters daily pass, conveying the trade between the Eastern and Western provinces.

LAMO or NAMO ISLAND, the Western point is in lat. 23° 28′ N. lon. 116° 59½′ E. and the N. E. point in lat. 23° 32′ N lon. 117° 13′ E. It is formed by two high mountains, which are connected by a low isthmus at ⅓ of its length from the Western point. The principal town of Namó is in a bay on its north side near the Eastern extreme, where a mandarin of rank resides, with a squadron of war boats at his command. There are two small Islands lying in the Eastern part of this bay, on one Geo. site of Lamo Island.

of which there is a fort. In entering the straits from the Westward, we passed over a sand bank at low water spring tide, about 4 miles to the Southward of Lamo West point, carrying 4¼ fathoms about 2 miles, then deepened into 5, 6 and 7 fathoms as we entered. When we anchored in 4¼ fathoms on the bank to allow our boat to sound round us, the pagoda on the island bore N. 69°½ W., the outer Lamock Island S. 71½° E., and the summit of the Cape of Good Hope S. 40° W. The boat had only 3¼ fathoms water to the Westward, yet all the large junks were observed to pass that way. A line of fishing stakes extends a long way from the West point of Lamó towards a small high island situated 2½ miles to the N. W. There are several openings for vessels to pass through, but a ship should adopt one in mid channel, as a mud flat extends a short distance off the North side of Lamó, close to the Eastward of the fishing stakes. A watering place was found on the North side, at the beach nearest the West end of the Island; and there is a small island nearly in the middle of the bay which is formed to the Northward of the low isthmus: we passed between this and a cluster of rocks to the Northward, and found the channel safe, with good soundings of 6 and 7 fathoms, excepting a little to the Eastward of the small Island; where, at low water, we had 4 fathoms on a muddy bottom.

Geo. site of Lamock Islands. LAMOCK ISLANDS, in lat. 23° 17′ N. lon. 117° 21′ E. is the S. W. or largest of the Islands of this name; there are 3 Islands and a large Rock, the latter being the Northernmost, and they extend 4 miles N. E. b. N. and S. E. b. S. A reef of rocks, some above water, extends nearly 5 miles to the S. W. of the Southern Island; close along the S. E. side of this reef and the Islands, we passed in 19 and 20 fathoms soft ground; and, once when blowing fresh with a heavy swell, we passed between the Lamock Islands and 4 other smaller Islands, situated nearer to the large Island of Lamo; these, in the old charts, are called Lamon Islands, and in this passage we were very close to a rock under water, on which the sea seldom broke; and, as there may be other rocks hereabout, a ship should not pursue this route until it is better examined.

Geo. site of the Brothers. BROTHERS are 2 Rocks lying N. W. and S. E. distant 2½ miles from each other: the Southern one is in lat. 23° 32′ N. lon. 117° 48′ E. and it bears from the S. W. Lamock Island N. 58½° E. about 27½ miles. We passed close to the Southern one in 24 fathoms water, and again to the Northward of them, where there is a wide channel, in which are found 20 fathoms.

Geo. site of Chapel Island. CHAPEL ISLAND, in lat. 24° 11′ N. lon. 118° 20′ E. situated off Amoy, or Hia-men-sue Harbour, bears from the South Brother N. 36½° E. distant 47¼ miles. When it bore South, and we were about mid-channel between it and Amoy Harbour, passed over a sand bank of 6 fathoms; but there is not less water on it, as we traversed across it several times.

Geo. site of Amoy Harbour. AMOY HARBOUR, named by the fishermen Hia-men-sue, the rock Caw-chat at its entrance is in lat. 24° 20½′ N. lon. 118° 16½′ E.*

Ock-sow Island. Ock-sow, or the Southern Island of the Lamyet range, was passed by the ships of

* The Plan of Amoy by Vankeulen is indifferent, but the Survey made by Mr. Felix Dayot is correct.

the embassy, between it and the main, and had not less than 13 fathoms: these Islands appear very barren and red, and are situated in lat. 24° 59¼′ N. lon. by chronometers 119° 34½′ E.

Pata-he-cock, the Easternmost of the Quesan Islands, measured by 4 good chronometers, in 6 days run from thence to Macao, is in lon. 122° 11′ 54″ E.

High Peaked Island, South Western extreme of Corea,* its Peak was found to be in lat. 34° 5½′ N. 125° 15′ E. by chronometers; and we could distinguish a village some way up the hill.

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## *YELLOW SEA, and GULF of PE-TCHE-LEE.*†

PROMONTORY OF SHAN-TUNG, the N. E. point is of moderate height, and broken appearance, and may be seen 6 or 8 leagues: it appears to be formed by several small islands, having very narrow channels between them. The Eastern point is in lat. 37° 23′ 40″ N., lon. by chronometers measured twice from Macao, 122° 45′ E. of Greenwich: the soundings are 16 and 18 fathoms about 3 leagues from the point, but increasing fast to 30 and 40 fathoms, when it is approached within 3 miles. About 2 or 3 miles to the N. W. of the N. E. point of Shan-tung, there is a small but high Island, named Alceste Island by Capt. Maxwell; it appeared to have a reef extending about ½ mile round it, and there are some rocks above water on the reef. To the Westward of Alceste Island 7 or 8 miles, there is another round Island situated at some distance from the main land, which forms a deep curve or bay hereabout, and is mountainous.

Shan-tung Promontory.

Geo. site.

Alceste Island.

After rounding Alceste Island, the ships of the Embassy steered about W. b. N. ½ N. towards a passage, formed by the MIA-TAU ISLANDS to the Southward, and many others to the Northward. In this route we found the depth of water very regular, from 15 to 17 fathoms on a mud bottom. Tchoo-san, the most Eastern Island is first discerned, when approaching the abovementioned passage; it is high, may be seen 9 or 10 leagues, and we made it in lat. 38° 0¾′ N., and 1° 44′ W. difference of longitude from the N. E. point of Shan-tung. We passed to the Southward of Tchoo-san and another small Island about 2½ miles more Westerly, then steered to pass between two small Islands, which are at the Western entrance of the channel, and are named KEU-SANS.‡ The Northern Keu-san is very remarkable, being like a gunner's quoin, with the highest part to the Southward, and is situated in lat. 38° 8′ N. lon. 2° 0¾′ W. of the N. E. point of Shan-tung. The soundings throughout the channel were very regular about 11 fathoms; although the Investigator got one or two casts of 6 fathoms on a small knowl.

Mia tau Islands.

Keu-san Islands. Geo. site.

* When returning from the Yellow Sea, we were as far East as lon. 124° 30′ in lat. 35° 45′ N.; but could not perceive the coast of Corea, although it is placed in the old charts near that meridian.

† By Lieut. D. Ross, of the Company's Surveying Ship Discovery, which with her consort the Investigator, accompanied the Embassy under Lord Amherst to Pekin River in 1816.

‡ In Mr. Barrow's Chart.

Pei-ho River. The course from the Keu-san Islands to the anchorage off the PEI-HO* is N. 70° W. distance 140 miles, and is so perfectly flat, that our soundings only varied from 12 to 14 fathoms all that distance. The Discovery's situation, when at anchor in 4¼ fathoms at low water, was found to be in lat. 38° 58¾′ N. lon. 118° 0′ E. or 4° 45′ W. of the N. E. point of Shan-tung, the entrance of the river being about 9 miles W. of us. No other object was visible from the ship than a temple, which stands on elevated ground about 3 or 4 miles within the river, and a little low land, seen from the mast head to the N. W. About 3 miles to the Westward of our anchorage, the depth was only 2 fathoms; and the whole space from thence to the shore, appeared to be very shoal, only admitting of a passage for boats, excepting at high water, small sized junks were seen entering, apparently not without difficulty. The ground about the anchorage is soft whitish mud, and holds very well. During 14 days we were at anchor, the weather was fine, and the wind variable; excepting two small gales of short duration, which we experienced from the N. E. The rise of the tide was 7 feet, the flood came from the S. S. E. and the ebb from the N. W., but the direction of the former seemed to be influenced by the winds; its velocity on the springs was about one knot per hour, high water at full moon about 9 or 10 hours. Variation of the needle observed 2° 30′ Westerly.

Gen. site of the anchorage.

On the South side of the entrance into Pei-ho river there is a military station, and a platform or tower for its defence. Here the width of the river, does not exceed ½ a mile, decreasing to less than a ¼ mile abreast of Ta-cow, about 4 miles up, where the Embassy embarked on board the Chinese yachts.

Ships bound to the anchorage off the Pei-ho, should not exceed lat. 38° 55′ N. until the soundings decrease to 7 or 8 fathoms, as a small shoal of 2 fathoms is situated nearly E. from the anchorage, on which the depth decreased rapidly from 7 to 2¼ fathoms, where the Discovery tacked: this shoal spot is in lat. 38° 59′ N. *by account*, and 16 miles Eastward of the anchorage, supposed to be one of the shoals, extending off the Western part of the SHA-LOO-POO-TIEN† ISLANDS, although we could not observe any land from our mast head, when at anchor close to the shoal.

Lea tong Gulf. From the anchorage off the Pei-ho River, on the 11th of August, in company with H. M. S. Alceste, we directed our course into the GULF OF LEA-TONG, and passed the Sha-loo-poo-tien Islands at night, without being able to make any observation on their situation, further than observing that the depth increases to 18 and 20 fathoms when a short distance to the Southward of them, and is very irregular; but after passing them, it becomes again regular at 14 and 15 fathoms. August 13th, at noon, we were in lat. 39° 9′ 50″ N. lon. 119° 22′ 50″ E. in 12 fathoms water, the Western part of the high land, on the coast of China, then bearing N. 18½° W. distant about 11 or 12 leagues. On the 14th, when in lat. 39° 40¼′ N. lon. 120° 13′ 53″ E. in 15 fathoms water, the TOWERS on the GREAT WALL OF CHINA, near the water side, were seen bearing N. 27¾° W., distant about 8 or 9 leagues. We then steered to the Eastward, in very regular soundings of 15 and 16 fathoms on a mud bottom, until August 16th, then anchored on the Eastern side of the Gulf of Lea-tong, to the Southward of a projecting point of land, which appeared to be part of an Island. About a mile to the Eastward of the point

Great Wall of China.

* *I. e.* North River, *Pei* signifying North, and *Ho* a River.

† Or Sa-la-po-tien.

observed on shore with an artificial horizon twice, and made the lat. 39° 31′ 35″ N. and 3° 19½′ E. of our anchorage off the Pei-ho, or in lon. 121° 19½′ E. The land here is high, and may be seen 7 or 8 leagues distant, and we filled our water from the second stony beach to the Eastward of the point, where it was easily obtained: the Alceste filled her water farther to the Eastward, where there was a better stream, but not so easily obtained on account of a flat. There is another point of land situated about 10 miles S. b. E. of the former, and between the two it curves to the Eastward, forming a bay. When coming to our anchorage we found the depth continue very regular until we passed the first point about a mile, when it began to decrease fast, so that 2 miles within it there is but 3 fathoms water. When at anchor in 5 fathoms, the North point of the Bay bore N. 38° W., the Southern point bore S. 3¾° W., a remarkable red hummock N. 88° E. a village N. 68° E., distant off the nearest shore to the Northward of us about 1 mile. Observations taken carefully on shore with a large theodolite, made the variation of the needle 1° 56′ W. Whilst at anchor, here we observed numerous vessels passing to, and from the Northward, many of which appeared deeply laden. The inhabitants were civil, but being totally ignorant of the value of dollars, we were unable to procure any refreshments from them. From the summit of a hill, extensive lakes to the Eastward were discerned, by which it seems probable, that the whole of this part of the coast is composed of numerous Islands; and to the Northward of the one under which we anchored, the Gulf of Lea-tong trends very much in to the Eastward. August 19th, at day-light, we weighed and steered to the Southward, carrying very good soundings from 8 to 10 fathoms, and passed the Southern point of the Bay about 2 miles off. At noon, by account in lat. 39° 3′ N. lon. 121° 5′ E. in 15 fathoms, when two islands of moderate height, one of them bore S. 55½° E. distant 9 miles, the other S. 32° E. distant 8 miles, and another high island distant 12 miles, bore S. 26° W.; to the S. S. E. of this 6 miles, there was another island of rocky appearance in lat. *by account*, 38° 47′ N. lon. 121° 4′ E. We passed to the Westward of all these islands, and had good soundings of 15 and 16 fathoms over a mud bottom; the bearings of the three first mentioned were taken from the Northernmost point of the Watering Bay, but the weather being thick and rainy when we passed them, could place their latitude only by account. After passing the South point of the Watering Bay, the land appeared high and trended off to the Eastward, forming a considerable curve, and again projects to the S. W.: we proceeded to the Southward of the rocky island, and steered to the Eastward for a part of the land which appeared to be near the South point of Lea-tong, and anchored about an hour in 20 fathoms water, off a small bay in which there is a village, and the country round has the appearance of high cultivation. When at anchor, the extremes of land supposed to be the coast, from N. 8° W. distant about 6 miles, to S. 9° E. distant about 2 miles, the two Southern islands which we passed, one bearing N. 30° W. the other N. 36½° W. The Northern islands of those which extend to the Northward of the Mia-taus bore S. 22½° W. distant about 7 or 8 leagues, latitude by account 38° 43′ N. lon. 121° 8′ E. This situation is on the Western side of the South point of Lea-tong, distant from it about 3 or 4 miles; and we have to regret that the rapidity of our motions prevented the position of the South point of Lea-tong from being fixed with greater precision, as by the missionary's chart it appears

Geo. site of Watering Bay in Lea-tong Gulf.

Islands near that Bay.

South Point of Lea-tong.

not to have been examined by any of them; and probably the Alceste and Discovery were the first European ships that ever visited it. After weighing, we steered along the land at about 2 miles distant, until we ascertained that it was really the Southern extreme of the coast; then directed our course to the S S. W., until about 10 P. M. when the Alceste anchored in about 30 fathoms water for the night. On the following morning we passed to the Eastward of the Northern Islands which extend to the Northward of the Mia-taus. The channel between them and Lea-tong Point is 7 or 8 leagues wide, and the Northern group is in about lat. 38° 23′ N. *by account*, lon. about 120° 58′ E.

Mia-tau Islands.

Geo. site of Cape Zeu-oo-tau.

CAPE ZEU-OO-TAU, on the North coast of Shan-tung, in lat. 37° 35′ 50″ N. lon. 121° 28′ 10″ E. is 76¾ miles of longitude West of the N. E. point of Shan-tung; it being a high bold cape, and when seen at a distance appears like an island. To the Southward of this cape lies Ki-san-seu Bay, which the ships of the embassy visited to procure water. The anchorage is exposed to the wind and sea from N. E., but sheltered by a group of small islands and rocks situated to the Eastward, between the Western one of which and Cape Zeu-oo-tau the passage is 1¼ mile wide, through which ships must pass when entering from the Northward: the soundings in this channel are 11 and 12 fathoms, decreasing to 4 and 4½ fathoms at the anchorage. There is a village on the South side of the cape, about ¼ mile from the point, defended by a fort on an elevated situation: at this village there are two wells of water; that nearest the beach was used by the ships, and found brackish; the other, being better, was kept by the inhabitants for their own use. We procured a little fruit at this place, but could not obtain any cattle for our crews: at first the inhabitants were ignorant of our money, but latterly took it for their fruit and vegetables.

Ki-san-seu Bay.

Cung-cung-tao Group.

CUNG-CUNG-TAO GROUP, the Northern island or rock bears from Cape Zeu-oo-tau N. 82° E. distant 7½ miles, and the S. E. island bears from the Northern one S. 34½° W. distant 4¼ miles. The passage between these islands and the coast of Shan-tung, in the narrowest part, is 2½ miles wide, and the depth 5 and 6 fathoms. If a ship is passing through it in the night, she must be careful of two little sand banks, one of which is near to the Southern point of the large island, and the other about 1 mile farther to the N. W.: the channel between the Northern island and the next was not examined, but we saw junks passing through. The variation of the needle was found to be 1° 50′ W. the tide rises 7 feet, high water on the day of moon's change, about 8 hours. The Discovery passed to the Southward of the Cung-cung-tao islands, and steered Eastward along shore to a projecting point of land, having an island a short distance to the Northward: this island is in lat. 37° 34½′ N. and 41 miles to the Westward of the N. E. point of Shan-tung. A rock and small reef projects off the North point of the island, and we passed it about 1½ mile distant, in 14 fathoms water. The coast between Ki-san-seu and this point curves in to the Southward, but no port for shipping was observed: regular tides were experienced along this coast.

Oie-hai-ou Harbour.

OIE-HAI-OU HARBOUR is situated about 5 or 6 miles to the Eastward of the last mentioned island and point, the North entrance of which is not easily discerned when coming from the Westward. The harbour is formed between Leu-cung-tow,

a large and high island, and a deep bight of the coast. There are several rocks above water a short distance to the Westward of Leu-cung-tow, between which and the latter is the best channel into the harbour, and it is 1 mile wide; no danger is to be apprehended from the rocks, or from the West side of Leu-cung-tow, but what is visible The soundings in the entrance are from 10 to 12 fathoms, but when abreast of a small rocky Island, which is near the S. W. part of Leu-cung-tow, the depth increases suddenly to 17 fathoms, and decreases again very rapidly to 5 fathoms; after which it gradually decreases to the Southern shore, and into the bay to the Westward where the village is situated. Between the Southern part of Leu-cung-tow Island and the main, which is $2\frac{1}{2}$ miles distant, there is a very safe passage, but over part of it there are only $3\frac{1}{2}$ fathoms at low water. A ship of easy draught, about 18 feet, would find the anchorage about $\frac{1}{2}$ a mile to the Southward of Leu-cung-tow tolerably secure; and a large ship, were it necessary, could enter the North channel, and make choice of a birth of 5 and 6 fathoms in a deep part, just to the Southward of the rocky island which is off the S W. point of Leu-cung-tow; she would have to anchor close to the land, but in that situation would not feel any swell. The Eastern point of Leu-cung-tow is very rocky, and the rocks above water extend 1 mile off it; the distance between the rocks and the main is $2\frac{1}{4}$ miles, but in mid channel there is a small rocky island, encircled with a reef, extending a short distance. The Discovery and Investigator turned through the Eastern channel, and found it nearly a flat, with $3\frac{1}{4}$ and 4 fathoms at low water, all to the Southward of Leu-cung-tow, but the depth increased to 6 and 7 fathoms between the small Island and the Eastern rocks.

Observations taken on the small island off the S. W. part of Leu-cung-tow, made it in lat. 37° 30½′ N. lon. 122° 10′ 55″ East, or 34 miles of longitude West of the N. E. point of Shan-tung. From the small island in the Eastern passage, Alceste Island was seen bearing S. 84° E. distant about 25 miles, and the other island about 7 miles to the Westward of Alceste Island bore S. $81\frac{1}{2}$° E. From our first anchorage in the harbour in 5 fathoms, the Northern passage rock bore N. $38\frac{1}{2}$° E., the fort at the Eastern part of the village N. $73\frac{1}{4}$° W., the small island to the S. W. of Leu-cung-tow about E. b. S., distant about $\frac{1}{3}$ of a mile. In this situation we were exposed to the swell from N. E. b. N. to E. N. E., but otherwise surrounded by land. Fresh water may be had at a sandy beach on the main, nearly South from the anchorage. Geo. site.

The coast of Shan-tung between Oie-hai-oie Harbour and its N. E. point, appeared to form a deep bight, and the land is high: we quitted the harbour at night, and made nearly an East course in regular soundings from 12 to 15 fathoms, until we passed the N. E. point. From the 25th July, the day on which the embassy rounded the N. E. point of Shan-tung, until the 3d of September, when the Discovery quitted it, we never experienced any weather so severe as to distress a ship, and the few fresh breezes we had were of short duration; therefore it seems probable, that ships may remain at anchor off the Pei-ho a considerable time, as the navigation of the Yellow Sea is easy during the summer months; and particularly from the number of vessels (traders) we met moving in all directions. The inhabitants at the different ports we touched at were civil, and thronged in great numbers on board to see the ships; and certainly appeared to possess more honesty than the Chinese about Macao and Canton. There did not appear to be a scarcity of cattle, although with the Winds in the Yellow Sea.

exception of a few sent off at the Pei-ho, we could not procure any for the crew. It is therefore advisable, for ships not to depend on getting supplies in the Yellow Sea.*

## *SOUTH COAST of FORMOSA, ADJACENT ISLANDS and DANGERS.*

Geo. site of Lamay Island. LAMAY-ISLAND, in lat. 22° 19¼′ N. lon. 120° 27′ E. or 6° 55′ East of Macao, by four good chronometers twice measured, and 120° 28½′ E. by lunar observations, may be seen about 6 leagues from the deck, having high yellow cliffs to the Westward, a small sandy beach to the Eastward, its length about 2¼ miles, and inhabited by a few fishermen. We got no ground with 70 fathoms line to the Westward, but about 3 miles to the Eastward of it, there commences a bank of soft mud, which extends off Formosa, having very good soundings on it from 15 to 26 fathoms. In the Discovery, we steered along the West coast of Formosa from its S. W. point, and passed between it and Lamay Island. Got no soundings off the S. W. point until Formosa West Coast. about ¼ mile off shore, had then 120 fathoms; and we got 30 and 40 fathoms on the mud bank when about 1¼ mile off Formosa, with Lamay Island bearing about W. N. W.

We anchored in 15 fathoms, very stiff holding ground, about 3 miles off a town named Pong-lieu, Lamay Island bearing S. 86¼° W. to N. 82¼° W., the N. W. extreme of the coast, being a small black hummock N. 41° W., Southern extreme of the coast S. 22¼° E., town of Pong-lieu N. 59° E. This town is very populous, and governed by a Chinese mandarin, who was absent at the time: there was a respectable bazar, and the inhabitants came off to us in catamarans, bringing refreshments for sale. We worked to the Westward from Pong-lieu, and anchored in 15 fathoms, about 3 miles off the coast of Formosa, and 5 or 6 from Lamay Island, with the black hummock N. 7¼° W., brow of Western Hill N. 26½° W., a town near which there is a river or inlet and many boats at anchor, bore N. 58° E. distant 3 or 4 miles, Lamay Island from S. 14° W. to S. 3° E., the S. E. extreme of the coast S. 35° E. When working across, as we neared Lamay Island, from 35 fathoms, we got into very deep water, so that about 1 mile off we had 52 fathoms: a small reef projects a short distance off its S. E. and Eastern parts. From our last anchorage we stood about 4 miles to the Westward, when we got off the bank of soundings.

Geo. site of Vele Rete Rocks. VELE RETE ROCKS, we passed about 1 mile to the Southward, and made them in lon. 120° 51′ 50″ E. or 7° 19′ 20″ East of Macao, as measured going to the

* Millet appeared to be the principal grain cultivated along the North coast of Shan-tung, and furnished the diet of those who came under our observation: the hills also shewed the same barren appearance near the sea, as may be observed along the whole South coast of China; and there was a most marked difference in the dress and apparent comforts between the people of the Yellow Sea and those inhabiting the province of Canton, the latter having much the advantage of the former. We saw but one war boat during the time we were in the Yellow Sea, by which we may infer, that about Canton and its vicinity, the greatest part of his Imperial Majesty's naval force is stationed; which, with their forts, are but poorly calculated to resist European forces. Many of the latter are quite destitute of cannon, and in such as have, the guns are so bad as to endanger those who fire them.

Eastward and returning again; the chronometers being very good ones, and agreeing close to each other. These rocks consist of several small ones, a little detached from each other: when we passed them, had several riplings extending in a N. E. and S. W. direction, so high, that the breakers resembled a very dangerous shoal, with the water breaking furiously. In the Discovery we were whirled round in these riplings, and although we felt a fresh breeze just before, we were almost becalmed on entering them.

Cumbrian's Reef.

CUMBRIAN'S REEF, the situation of which, as given by Captain Tate, we examined in the Discovery, and are certain it cannot exist to the Southward of lat. 21° 40′ N., as with a very strict look out from the mast head in clear weather, at three different times near its situation, no danger was perceived. Several times hereabout the spray rose rather high, but on examination, we found it proceeded from strong eddies: it appeared that the strong set which came from the Southward was not the effect of a constant current, but of a tide, for sometimes we appeared to make great progress in our course, and at other times were swept away very fast to the Northward; and when the current to the Northward ceases, there seemed to be merely a slack water, instead of a stream to the Southward.

The captain of an American ship is said lately to have seen the Cumbrian's Reef, and places it in about lat. 21° 44′ N. Our chronometers made the difference of longitude between the Vele Rete Rocks and the West end of Botel Tobago Xima 42 miles East, which places the middle of the latter in lon. 121° 37′ 22″ E. and the Northern Island of the Bashees in 121° 59½′ E.

Geo. site of a Bank near the Pescadores.

BANK OF IRREGULAR SOUNDINGS, in lat. 22° 46′ N. lon. 118° 55′ E. where we had 20 fathoms water, extends to the Southward of the Pescadores: the least water we had was on a ridge of coarse gravel, near to which we anchored at night, and our boats found no less water than 7 fathoms. When at anchor, by observation of the Pole star, made lat. 22° 51′ N. lon. about 119° 1′ E. The ridges of coarse sand or gravel appeared to extend in a North and South direction, with fine sands between them: we anchored about 1½ mile off High Island of the Pescadores, in 13 fathoms sand and shells, with it bearing from S. 24½° E. to S. 79° E., a town on the largest Island, named Pauk-foo by the natives, bore N. 35° E. distant about 8 miles. The Western Islands were two high black rocks distant about 5 miles, and bore N. 37° W. There were many rocks visible to the Eastward, and some shoal spots breaking between us and the town.

Geo. site of High Island.

HIGH ISLAND, in lat. 23° 14′ N. lon. 119° 26′ E. is of moderate height, flat at the top, with high rocky cliffs, and may be seen about 6 leagues in clear weather. It is inhabited and cultivated, and a reef extends off the western side of it about a mile. Whilst on the bank of soundings, we experienced tides setting round the compass in 24 hours.

Bashee Islands.

BASHEE ISLANDS are well inhabited, and abound with bullocks, goats, pigs, fowls, &c.; also at Sabtang, Bayat, and Dalupiri refreshments may be got, and on their Western sides there is anchoring ground. The Révolutionnaire frigate, having lately twice touched at Batan, found good anchorage, and all sorts of provisions very cheap, the price of a bullock being from 1 to 4 dollars.

## *NEW DISCOVERIES in the STRAITS OF GASPAR, S.E. Part of BANCA, to the Westward of SOUROUTOU, among the MOLUCCA ISLANDS;—Passage through TORRES STRAIT, and N. W. CAPE OF NEW HOLLAND.*

Alceste Rock. ALCESTE ROCK, upon which H. M. S. of this name struck and was wrecked, about 7 A. M. February 18th, 1817, when returning from China with Lord Amherst and suite on board, is a small coral shoal, with about 2 fathoms water on its shoalest part at low tide, from which part the West side of Gaspar Island bore N. 8° E., North end of Pulo Leat S. 40° E., and Saddle Island,* or the small Island at the West part of Pulo Leat S. 5° W., distance from the nearest part of Pulo Leat between 3 and 4 miles. This dangerous rock has close to it 17 and 18 fathoms water, which are the usual depths to the Northward between it and Gaspar Island, and although it lies in the hitherto supposed fair track of ships steering down on the East side of that Island for Macclesfield Strait, yet to the officers of the Alceste it appeared to be only the outer or N. Westernmost patch of the coral spits which project far out from the N. and N. W. parts of Pulo Leat, having gaps of deep water between some of them.

Coral spits near Pulo Leat.

This discovery of the Alceste Rock, at the North part of Macclesfield Strait, and the coral spits having been found to project much further out from Pulo Leat than formerly supposed, together with Discovery Rock, situated nearly in the middle of the Strait, renders great caution indispensible here; and it is not improbable that other sunken rocks may exist about these straits yet undiscovered.

Directions to enter Macclesfield Strait from the Northward. Ships coming from the North towards Macclesfield Strait, when N. W. winds prevail, and strong S. E. currents, setting through between Gaspar Island and Pulo Leat, in January, February, and March, should, if they do not pass on the West side of Gaspar Island, borrow near its Eastern side, and after rounding it, haul in to the Westward for Tanjong Brekat, in order to counteract the S. E. current, and give a birth to the Alceste Rock: therefore do not approach the North part of Pulo Leat within 4 or 5 miles until the small Island at its Western extremity is bearing to the Eastward of South, and keep it so, in steering Southward for the narrow part of the Strait, formed by Discovery Rock to the West, and the small Island off Pulo Leat to the Eastward, the latter of which may be passed at the distance of $1\frac{1}{2}$ or 2 miles.

S. E. end of Banca, is a separate Island. The S. E. projection of the Island Banca, called Entrance Point and Rocky Point, which forms the Western boundary of Macclesfield Strait, has lately been explored by Mr. Robertson, Master Attendant of Banca, and found to be an Island called by the Malays Pulo Lepa, separated from Banca by a small channel navigable for boats.

* Called by the Malays Pulo Chellaka, *i. e.* Misfortune Island. The crew of the Alceste remained on Pulo Leat about fourteen days, (except the cutter and barge, with Lord Amherst and suite, arrived at Batavia in 3 days after the loss of the Frigate) and were taken off from it by the Ternate, Lieutenant Davidson, sent from Batavia, who had much difficulty in getting into the South entrance of the Strait against strong Southerly currents.

BREAKERS to the Westward of Souroutou, were seen from the mast-head of the ship Aurora at 8 A. M. on the 11th November 1816, which bore S. b. W. ½ W. distant about 3 miles, when the Eastern extremity of Souroutou was bearing E. b. N. ¼ N., the other extreme being obscured by clouds, as the weather was squally at the time. Doubtful danger to the West of Souroutou.

CORAL BANK, near Noesa Comba, was sounded upon by the ship Aurora, on the 23d November 1816, when the wind was light at S. E., and steering to the S. Westward. She shoaled suddenly from 35 to 10 fathoms, and that part of the Bank which she passed over, appeared about ¾ mile in breadth, and several casts of the lead were only 4¾ fathoms coral, with apparently less water to the Southward and Eastward. From 5 fathoms, the depth increased regularly to 22 fathoms, no ground; Noesa Comba was obscured in a squall, when she had shoal water on the Bank, which her observations place in lat. 5° 26′ S. lon. 117° 0′ E. by chronometers, measured from the East Point of Bouton. Coral Bank near Noesa Comba. Geo. site.

AURORA BANK, at the Northern part of the Gillolo Passage appears to be a recent discovery, of which the following description has been transmitted by Captain George Vint of the Ship Aurora, after her arrival in Canton River from Bengal. Aurora Bank.

At 8 A. M. 25th December 1816, steering Eastward with a light Northerly air, was surprised at seeing rocks alongside; tacked, and had 8 fathoms water in stays; steered N. W., and deepened gradually to 45 fathoms, then 120 fathoms no ground. When upon the bank, had observations, which place it in lat. 0° 40 N. lon. 129° 30′ E., and the Northernmost of Catherine's Islands was seen from the top-mast head bearing W. ¼ S., distant about 15 miles. This bank must be of small extent, as the Wexford and Elphinstone were about 1, and 1½ mile to the Wesward of the Aurora when she was upon it, and neither of the former had soundings. The least water found by the Aurora was 8 fathoms, but a Whaler she spoke some days afterward, stated, that on some parts of this bank there is only 5 feet water, which if correct, must render the Gillolo Passage not so safe in squally weather as formerly supposed. Geo. site.

At 6 P. M., when the Aurora had the Northernmost of Catherine's Islands bearing N. b. W. distant 3 miles, had ground 58 fathoms, and shoaled regularly to 26 fathoms when not more than a mile from it. A light breeze springing up, steered off S. E., but soon decreasing to a calm, we were drifted toward the central small Island, and anchored in 20 fathoms at 9 P. M. on a bottom of sand and shells:—found the current or tide setting 3 miles per hour to the S. W., and afterward West about 1½ mile per hour.—The Northernmost of these Islands has the aspect of a rabbit, the central one resembles a round sugar loaf, and the Southernmost and largest Island is of flat appearance. Catherine's Islands, soundings near them.

TORRES STRAIT, being now frequented by vessels bound from Port Jackson to India, some of which have been wrecked in passing through it, any information therefore, tending to elucidate this intricate navigation may prove of utility. With this view, the following remarks are given, which were made lately by Captain B. Osman, in his passage from Port Jackson towards Bengal. Torres Strait.

We left Port Jaskson in May, and when in lat. 9° 46′ S. steered West for Torres Strait, and fell in with the Eastern Fields in about lon. 145° 45′ E. which were small Remarks in passing through it.

detached reefs. Afterwards, entered the Barrier Reef in about lon. 145° E., and 12 or 13 leagues to the Eastward of Murray's Island, which we passed on the North side, then steered W. b. S. ½ S. with the view of getting more to the Southward, and to avoid the Coast of New Guinea; but unfortunately, having no obervation for two days, although steering as above, we found ourselves on the third day in lat. 9° 21′ S. and the high land of New Guinea in sight from the deck. Here we made little progress; the Strait in this part being covered over with shoal patches, coral rocks, and reefs innumerable, made us endeavour to get to the Southward, but were obliged to remain at anchor most of the following six or seven days, on account of thick squally blowing weather. When the weather became moderate, we weighed and worked to the Southward till in lat. 10° 5′ S. and found no difficulty in this parallel, steering for the Prince of Wales' Islands.

Tides. We had been led to believe, that the tides in Torres Strait were very weak, and set nearly East and West; but in the middle of the Strait we experienced their velocity on the springs to be from 3 to 4 miles an hour, the flood which then rises about 6 feet, setting W. N. W. ½ N., and the ebb about E. S. E., and their velocity is probably not less than 2 miles per hour in neap tides. This renders particular attention to the tides necessary when observations are not obtained, to prevent being set over on the Coast of New Guinea, as we were; which, together, with bad weather, lengthened our passage through the Strait to 13 days.

Supposed best Track through the Strait. The best route through appears to be, to make Murray's Island if possible, and after passing on the North side of it at 3 or 4 leagues distance, 4 Islands will be seen, with apparently good passages between them, two of which Islands may be left to the Northward. After passing these, get into lat. 10° 10′ or 10° 15′ S. as soon as possible, endeavouring to avoid getting much to the Northward of the above latitude, and steer a direct course for Prince of Wales' Islands. If a ship should be set over to the Northward by the tides or a current, and find difficulty with a scant wind in getting to the Southward, she ought in such case to anchor upon the flood, and work to windward with the ebb tide, by which means she will get speedily to the Southward into the proper track.

N. W. Cape of New Holland. NORTH WEST CAPE OF NEW HOLLAND, was approached by Captain Balston in the Princess Amelia, when bound by the Eastern passage to China in 1816, which he made in lat. 21° 50½′ S.; and in a run of ten days from thence to Geo. site. Bally Town, Allas's Strait, he measured 2° 32′ West difference of longitude, which allowing the latter in lon. 116° 33′ E. would place the N. W. Cape in lon. 114° 1′ E. or 28 miles to the West of its situation as observed by Captain Torin, and stated in Vol. I. of the India Directory. This is deserving of attention by ships running for the coast of New Holland near the N. W. Cape, in order to prevent falling in with it unexpectedly during the night. Captain Balston fell in with the Coast in lat. 22° 19′ S., where it was found to be very low, with small hummocks, and no soundings 5 or 6 leagues off with 90 fathoms line. He, therefore, recommends, to make the coast in lat. 22° 8′ S. to 21° 55′ S., where the land is higher, of even appearance, and except in a dark night, would be discerned before a ship could get into danger.*

* A Portuguese ship from Europe bound to Macao, was wrecked on the coast to the Southward of the N. W. Cape, a short time before the Princess Amelia made the land there.

## *DOUBTFUL ROCKS in the SOUTH ATLANTIC and INDIAN OCEANS; GREAT FISH RIVER, GOLD DOWNS RIVER, SANDY ISLAND, CARGADOS GARAJOS, MARQUIS OF HUNTLEY'S, and SAYA DE MALHA BANKS, and GANGES BANK near DIEGO GARCIA.*

Doubtful Shoal near the Equator.

DOUBTFUL SHOAL, reported by Mr. W. Blair, who was a passenger in the French ship of war La Licorne, bound from India to Rochefort in France. July 21st, 1817, at 2 P. M. when in lat. 1° 2′ S. lon. 19° 3′ W. of Greenwich by chronometer, and 19° 13′ West by lunar observations, the ship going at the rate of 7 knots, appeared to touch the ground with a tremulous motion about two or three minutes, as if grazing over a bank of soft sand, but her velocity was not sensibly impeded by the shock. The sea *appeared* discoloured, but no soundings were obtained at 70 fathoms when the lead was hove, after bringing the ship to, then about a mile distant from the place she was supposed to have touched on a shoal.

It was probably the shock of an earthquake felt in this ship, which are not unfrequently experienced in different parts of the Atlantic and Indian Oceans, or she might have grazed over a piece of submerged wreck, instead of a shoal.

Doubtful Sunken Rocks to the Eastward of Tristan d'Acunha.

THREE DOUBTFUL SUNKEN ROCKS, reported by Captain John Lennon, of the private ship Hibernia. This ship touched at Tristan d'Acunha, with the view of filling up her water, but she was nearly driven on the rocks by a heavy swell that *suddenly* rose, and rolled in upon the shore previous to a gale.

After having steered E. b. S. 357 miles by log from Tristan d'Acunha, with a *free* wind, on the 12th of April 1817, at ½ past 11 A. M. saw THREE SUNKEN ROCKS, one of which we narrowly escaped: there appeared to be about 9 feet water on that we had close along side, and the Three Rocks form nearly a triangle, within the bounds of a cable's length, which we made in lat. 37° 31′ S. lon. 4° 42′ W.

Captain Lennon stated to me, that he was fully convinced these were real dangers, as he could see *variegated sea-weed* upon the rock nearest to them; but being much alarmed at the time, and the ship going at the rate of 7 knots, he had no opportunity of verifying his opinion by sounding on them. He nevertheless said, that the sea did not break nor change its appearance in passing over these supposed Rocks, which gives reason to infer, that it might *probably* be three large whales, or other species of huge monsters of the deep hitherto little known, which seem to exist in the Southern Ocean, as will be shewn hereafter.

Telemaque Doubtful Shoal.

TELEMAQUE DOUBTFUL SHOAL, is said to have been seen by the Macedon Brig, J. Blakeman, commander, on the 5th of May 1816, whose statement is as follows.

With a moderate breeze at S. W. steering E. S. E. at 7 A. M. saw breakers bearing East distant about 7 miles; hauled up immediately S. S. E. and sounded in 90 fathoms. At 8 A. M. saw a very extensive patch of breakers bearing E. by S. ¼ S. distant 1 mile, and at 8½ A. M. another patch bearing E. S. E. of small extent. At 9½ A. M. lat. 38° 0 S. by account, lon. by observation of Sun and Moon, 22° 54½′ E. in soundings 40 fathoms, when all these patches of breakers were in one, very distinctly seen; the first bearing E. b. N. consisting of two breakers, the next or

middle one very extensive, estimated about 3 miles in length, bearing from E. ½ N. to E. ¼ S. distant 5 miles, and the southernmost or small breaker E. b. S. ¼ S.

It is probable that the breakers described above were not *real dangers*, but only strong ripplings produced by the current, and there must be a mistake in the soundings of 40 fathoms at 9½ A. M., as the Macedon had been steering S. S. E. from having 90 fathoms 2½ hours before, and ought to have increased her depth; besides, it is cetainly very improbable that the depth should be only 40 fathoms in lat. 38° S. but as the position of these breakers seen by the Macedon, corresponds nearly with that assigned to an *apparent* shoal seen by the Pallas, (described page 87 second edition of the India Directory), a good look out ought not to be neglected when near this situation, in case *real* danger should exist.

Very Doubtful Shoal to the Westward of St. Paul I.

VERY DOUBTFUL SHOAL, from the journal of the ship Wellington, George Lyons, commander, bound to Ceylon. At 1 P. M. 9th Jan. 1817, in lat. 39°. 53′ S. lon. 71° 13′ E. a man forward gave notice that whales were in sight, having actually seen some in the morning; but on looking round, I found we were surrounded with *spots* of discoloured water, resembling exactly the colour of coral rocks of different sizes, none of them larger than 60 or 70 yards in diameter, and apparently about 8 to 10 or 12 fathoms under water, separated from each other probably about 100 to 200 yards. These shades were seen all round, with discoloured water as far as the eye could discern, and we sailed 7 miles distance through among them, with an officer on the fore top-sail yard to cun the ship between the patches, then got into clear water, and soon lost sight of them.

About an hour before we saw the discoloured water, we had a sudden shift of wind from E. S. E. to North and S. W. and when we saw the discoloured water, it blew a gale, the ship going at the rate of 8 knots, which prevented me from examining the *apparent* shoal. We saw Amsterdam on the 11th, or three days afterwards.

It is not probable that the patches of discoloured water were upon a shoal of 7 miles extent; but we may rather infer, that they consisted of spawn or the exuvia of fish, intermixed with marine weed, which is frequently seen in this part of the ocean, and very alarming to strangers.

Large Fishes liable to be mistaken for Dangers.

FISHES *of uncommon magnitude* (apparently not known to naturalists) are sometimes seen in the Southern Ocean, and may be mistaken for dangers by persons unacquainted with those seas, as may be perceived by the following extract taken from the log-book of the ship Hercules, bound from England towards India in June 1816.

At 2½ P. M. the man at the mast-head said he saw a rock on the larboard bow, which was thought to be the Slot Van Capelle Shoal, as we were looking out for it; and the weather being fine we stood towards it, intending to pass near enough to have a good view. About 40 minutes past 2 P. M. another was seen about 2 miles on the starboard bow, and we appeared to be going between them; shortly afterwards, to our astonishment, there appeared one right a-head not far from us. We were in the act of hauling away from it, when we observed it disappear all at once, shewing an immense fish's tail as it went below the surface of the sea. The ship no doubt had disturbed it, as it lay without motion before we got close, the sea making a small break on the head or fore part of the body, which was about 16 feet above water, and about 30 feet in circumference, of a white grey colour, covered with a mixture of barnacle, sea-weed, &c., like a wreck that had been long in the water.

The length could not be determined, but think it must have been great by the appearance of the discoloured water over the animal. If we had not got so suddenly close to it, should positively have declared that we had seen the *rocks above water* about a mile distant from each other, as these animals lay without motion, part of them about 16 feet above water and the sea breaking upon them.

Great Fish River, thought to be navigable.

GREAT FISH RIVER, or Rio de Infanta, situated in South Africa, to the N. Eastward of Cape Padron, seems never to have been carefully examined; but there is reason to think that vessels of small size would be able to enter it, as will appear by the following communication received from Captain James Callander, of the Cape of Good Hope.*

Lieut. Fraser states, that whilst stationed at the Block House of the Caffers Driff, he had frequently, accompanied by other officers, been at the entrance of the Great Fish River and along its banks, shooting Hippopotami, and from the transient remarks made during these excursions, he is of opinion that it is navigable for vessels of considerable burthen, by taking the opportunity to cross over the bar at high water, when the sea does not break on it. The deep channel is on the east side, close to two large round rocks, and when fairly into the river the space is from 600 to 700 yards in breadth, all having the appearance of deep water; and the Channel over the bar in the deep part is fully 100 yards in breadth, apparently deep even at low water, although the sea broke all across at that time. The broad space inside continues its breadth for 7 miles upward, and the confluence of the Cape River is about 3 miles up, which would be a good situation for a town or settlement, the adjacent country being fertile, and interspersed with wood, or forests of excellent timber.

Gold River, apparently navigable.

GOLD, or GOLD DOWNS RIVER, on the South East Coast of Africa, was lately approached by the ship Mary Ann, Capt. Webster, from Bengal, who was becalmed for some time off its entrance, which appeared to be navigable, with a large lagoon or harbour inland.

Longitude of Sandy Island by Capt. Hine.

SANDY ISLAND, in the Madagascar Archipelago, was seen by Capt. Hine, of the Company's ship Cabalva, on the 27th of April, 1816, and he made it 1° 16′ West of the Island Agalego by chronometers, or in lon. 55° 34′ E. allowing the latter to be in lon. 56° 50′ E. as stated by Capt. Hine, or 10 miles more easterly than described in the India Directory.

Cargados Garajos Bank

CARGADOS GARAJOS BANK, seems to be of greater extent in an East and West direction than generally supposed; for the Acteon, Capt. Mackie, on the 16th March 1816, at 7 A. M. got upon it in lat. 15 ′ 20′ S. lon. 60° 14′ E. by chronometer, and had soundings 35 fathoms sand and coral. From this situation, steering N. E. b. E. and E. N. E. the soundings were generally from 25 to 16 fathoms, sometimes 14 fathoms, particularly at ½ past 7 P. M. when in 14 fathoms, a strong smell of sea-weed was experienced, as if they were passing under lee of a shoal or reef of rocks, although no danger was perceived. At this time they were in lat. 14° 30′ S. lon. 61° 23′ E. by chronometer, and shortly afterward deepened to 40 fathoms at 8 P. M., continuing to steer N. E. b. E. had no soundings at 9 P. M.

Shoal Soundings on it.

* Capt. Callander obtained this information from Lieut. Fraser, of the Cape regiment, who was long stationed at the Caffers *Driff* or *Ford*, where there is a block-house. This place is 30 miles from the sea, to which, and some distance beyond, the tide flows; and there is no other ford below it towards the sea.

The Ganges, Capt. Falconer, at noon, Feb. 22d, 1817, saw a low sandy Isle, bearing S. 20° W. distant about 7 miles, then in lat. 16° 12′ S. lon. 59° 49′ E. by observation of Sun and Moon, in soundings 20 fathoms sand and coral: from this situation, steered East, about 28 miles till 11 P. M. and had 45 fathoms, when shortly afterward they got off the Bank of Cargados Garajos.

Feb. 26th, at 9 P. M. the Ganges again got soundings of 30 fathoms white shells in lat. 15° 0′ S. lon. 60° 40′ E. by chronometer, carried up from the observation of Sun and Moon. From 9 P. M. continued in soundings of 20 to 30 fathoms till 8 A. M. steering N. b. E. and at noon lost soundings in lat. 14° 14′ S. lon. 60° 43′ E.

Discovery of Marquis of Huntley's Bank.

MARQUIS OF HUNTLEY'S BANK, is a new discovery made by Capt. D. McLeod in the ship of this name, with the Duke of York in company, bound toward Bombay; and the following account of it has been transmitted from thence by Capt. McLeod.

March 28th, 1818, at 7 A. M. with a light breeze at S. S. W. steering N. b. E. observed Rocks under the ship's bottom, sounded in 10 fathoms. The breeze being light and the water very clear, stood on till 7½ A. M. in soundings 10, 10½, 11, and 13 fathoms, then hove to, and sent out two cutters, one of them to the northward which gradually deepened from 13 to 40 fathoms, about 1¼ mile from the ship; afterwards no ground at 40 fathoms. The other cutter, which went to the eastward, deepened from 13 to 20 fathoms, then no ground at 30 fathoms about 1 mile from the ship. The Duke of York hove to, bearing S. S. W. ½ W. about 2 miles distant, and showed soundings of 10, 13, and 17 fathoms.

At 8½ A. M. bore away and steered N. b. E. under easy sail, keeping a cutter ahead of the ship until 9½ A. M. having run about 4 or 5 miles N. b. E. from 7 A. M. when we first sounded. After 9½ A. M. got no soundings at 75 and 105 fathoms.

During the morning with a man stationed at each mast-head, no appearance of breakers or shoal water could be discerned, but only ridges of strong ripplings at short distances from each other, in one of which the boat found the water much agitated, and the particles striking against each other with considerable noise, but no ground was got at 40 fathoms: the current here was found setting strong to N. E. and when out of the rippling it appeared setting weakly to N. N. W.

While in soundings the ship was surrounded by many sharks and Rock cod, several of which were caught: the bottom seemed to consist of clear white coral rocks in ridges, between which deep chasms distinctly appeared, but from the regularity of the soundings it would seem that this was so in appearance only; the lead brought up small pieces of coral, and when in 40 fathoms small grey slime, sand and broken shells.

When we hove to, upon the Bank in 13 fathoms, at half past 7 A. M. our lat. was 9° 57′ S. (deduced from a good observation at noon taken 5 hours afterwards, our lat. 9° 44′ S.) and lon. 50° 18¾′ E. by a series of observations of Sun and Moon, taken on the 29th and 30th March, and 1st of April, measured back by chronometers. The mean result of various lunar observations taken before and since the 28th of March, and measured by chronometers to our position of 13 fathoms, would place that part of the Bank in lon. 50° 20′ E. and lat. 9° 57′ S. as stated above: and our last soundings of 40 fathoms in lat. 9° 53′ S. and in the same longitude.

Geo. site.

Capt. McLeod is disposed to think that there may be no danger on this Bank,

and that the ship probably passed over the shoalest part, by the water deepening all round, but that he had not the means to form a correct opinion of its extent.

SAYA DE MALHA BANK seems to extend farther Eastward than generally represented, by the account of Capt. Falconer, of the Ganges, who got soundings of 40 fathoms on it at 8 A. M. 4th March 1817, then shoaled gradually to 15 and 14½ fathoms at noon when in lat. 10° 37′ S. lon. 62° 10′ E. by chronometer, having run 9 miles E. N. E. from 8 A. M. till noon, and shortly afterward got no more soundings: so that the eastern edge of the Bank is steep, with rather shoal soundings in this part.

Saya de Malha Bank of great extent, and steep to the eastward.

GANGES BANK, appears to be a new discovery, upon which the ship of this name sounded, March 12th, 1817. At 10½ A. M. the water was discoloured, saw rocks under the bottom, and had soundings 17, 13, 13, and 11 fathoms, which continued a few minutes steering East, and afterwards at 11 A. M. got no ground. The water appeared discoloured on the Bank about 1½ mile in a North and South direction, and about ¾ of a mile from East to West: the ship crossed over nearest to the North end of the Bank, and when upon it in 11 fathoms water, the lat. was 7° 26′ S. from observation at noon, lon. 70° 47′ E. by chronometer, from last lunar observations; and 70° 54′ E. by chronometer measured back from the Island Diego Garcia, allowing this Island to be in the longitude stated by Horsburgh.

Ganges Bank a new discovery.

From having soundings on this Bank (which cannot be that sounded on by the Centurion, being more to the northward) we steered E. b. N. 26 miles till 5 P. M. and then got soundings of 9½ and 9 fathoms on the Pitt's Bank, the rocks plainly seen under the ship's bottom.

Soundings on Pitt's Bank.

## *ABD-UL-CURIA FALSE, BAHREIN and ARAD ISLANDS, DURABLE SHOAL, BALE OF COTTON ROCK, ENGANO ISLAND, REEF off PULO BINTANG, LA PAIX'S SHOAL, ROCK near JAVA, GILLOLO PASSAGE, SHOAL near the BOO ISLANDS, ROCK at MACASSAR ROAD, KABRUANG ISLAND, FORMOSA SOUTH POINT, ENDEAVOUR ROCK in BASS'S STRAIT, and ISLAND near the SOUTH COAST OF NEW HOLLAND.*

ABD-UL-CURIA *FALSE*, or ROCKS, seen by Mr. Salt in the Marian, as stated in his Voyage to Abyssinia, have hitherto been thought of doubtful existence, but the following description of them by Capt. J. Parkin, of H. M. ship Bacchus, demonstrates the existence of these Rocks, or rather Rocky Island, which may without impropriety be distinguished by the name of Abd-ul-curia *False*, because it must have often been seen, and mistaken by navigators for the large Island of this name, situated about 8 leagues S. b. E. from it.

Abd-ul-curia False, not generally known to navigators.

April 15th, 1817, about 2 P. M. passed in the Bacchus between the Island Abd-ul-curia and the Westernmost Brother called Soontra; and in rounding the N. E. end of the former about 2 miles distance, crossed over a shoal, having from 27 to 10 fathoms water on it. A strong current was then setting from the westward, and the wind being Easterly, the sea broke into the gun-ports, although the weather was moderate.

After passing the N. E. end of Abd-ul-curia at 2 P. M., we steered by compass N. W. b. W. 23 miles, then saw high white peaked rocks, bearing N. E. ½ E. distant 6 miles, which are not placed in the charts. They are perfectly white, forming in five Peaks, with a Black Rock fronting the sea, when viewed in the above-mentioned bearing, and may be seen 7 or 8 leagues.

Bahrein Island, with sailing directions.

BAHREIN ISLAND, on the Arabian side of the Persian Gulf, has been visited in October 1817, by Lieutenant T. Tanner of the Company's Bombay Cruizer, Psyche; and the following directions for vessels proceeding to that Island are transcribed from his interesting and valuable observations.*

Departing from Berdistan Bank with the Hummocks of Kenn N. E., and Barn Hill East, steer S. b. W. ½ W. by compass, which is thought to be the best course. Having approached the parallel of 27° N., keep a trusty person at the mast-head to look out for shoals or discoloured water, which from aloft can generally be seen at a considerable distance: here, also, the lead must be kept briskly going, for by steering the course mentioned above, you will get upon the PEARL or BAHREIN BANK, in lat. about 26° 50′ N., suddenly shoaling from 30 and 25, to 14, 10, or probably to 8 fathoms water on a sandy bottom.

With a favourable wind or in the night, keep under reduced sail, to obtain true soundings, and be ready to anchor instantly if you get less water than was expected. The soundings, however, as you proceed to the southward, will be from 9 to 8 fathoms, with overfalls occasionally from 9½ to 7 fathoms. Attention to the tides is necessary, which run strong on the springs, particularly as you approach the Islands, and they set about E. S. E. and W. N. W.

With an adverse wind, work between the meridians of 50° 45′ and 51° 5′ E., which space may be considered the *Fair-way*; for on either side of these limits there are dangers, the extent and true situation of which are unknown to European navigators.

In lat. 26° 50′ N. lon. 51° 10′ E. the Favorite sloop of war had 6 fathoms rocky bottom, which was thought to be on the edge of the Crescent Shoal: betwixt this, and the shoals to the Westward (on one of which the Durable was lost, shortly to be described), may be considered the Fair Channel, as mentioned above. In this Fair Channel there appears to be no danger until you approach the Islands; and when in lat. 26° 30′ N. or 26° 28′ N., you will see from the deck the trees on ARAD ISLAND, called *Bluff Point*, bearing to the S. Westward, and distant 3 or 4 leagues, in soundings from 8 to 5½ fathoms. If bound to the N. W. anchorage, haul up a point to the Westward of Arad, but a point to the Southward of it if bound to the S. E. anchorage: you will then soon raise the Island of Bahrein, which is somewhat higher than Arad, and lies more to the N. W.

Arad Island and Reefs.

ARAD ISLAND extends nearly North and South, being very low, surrounded by the JELLIA SHOALS and other Reefs, which stretch out from it 4 or nearly 5 miles in some places, particularly in a N. W. direction from Bluff Point; for if this Point bear S. E. b. S. and a Portuguese Fort (in ruins on the Western part of Bahrein) S. W. ½ S., you will be in 2½ fathoms on the Western edge of Arad Reef, with the Rocks visible under the vessel. To avoid these Reefs in proceeding to the N. W.

* Communicated to me by Lieut. James Robinson of the Company's Bombay Marine, an officer who, by perseverance, with very little assistance, and in a gun-boat only, has completed a laborious and correc survey of the greatest part of the coasts of Banca.

anchorage, haul to the Westward towards the West Point of Bahrein, till Portuguese Fort bears S. S. W.½ W. or S. S. W.¼ which seems to be a good *leading mark* to avoid the dangers on either side.

When Portuguese Fort bears from S. S. W. to S. W. b. S., and Bluff Point from East to E. b. S., there are overfalls from 8 to 3½ and 3¼ fathoms, then 5 and 4 fathoms, afterward shoaling gradually to 3½ and 3¼ fathoms at the N. W. anchorage, which is convenient and safe for a short stay in the fine weather season, and sheltered by the Island from South and Easterly winds. But in the winter months, or during the season of hard N. Westers, it is both unsafe and inconvenient, being exposed to the wind and sea in that direction, without any means of communication with the town. When at anchor here in 3½ fathoms sand, Portuguese Fort bore by compass S. W.½W., Bluff Point E. b. N.¼ N., Gussaur Sawhee E.½ N., and the Water Castle E. S. E.; distant 2 or 2¼ miles off Bahrein, lat. 26° 15½′ N. lon. 50° 40′ E. variation 5° 40′ W. N. W. anchorage. Geo. site.

The S. E. anchorage on the opposite side of the Islands between the Debil and Jellia Shoals is situated in lat. 26° 11′ N. or 26° 12′ N., and being sheltered from all winds and sea by the surrounding reefs, should always be preferred by a Ship intending to remain longer than three days: but it is more difficult of access than the former anchorage, and the Channel leading towards it between the Reefs is so intricate, that a stranger ought not to enter it without a Pilot, unless in a case of great emergency when one cannot be procured; and this will seldom happen, for on making the usual signal with a gun at the edge of the Reef, a person will come off to conduct you into the port, or the men in the Pearl Boats will come alongside, and offer their services for a few rupees. S. E. anchorage.

The Island of Bahrein seems very fertile, well cultivated, covered with plantations of date trees, &c; and its Northern shore extends nearly in an East and West direction. The chief Town MANAMA, situated on the N. E. extremity, is large and populous; the buildings are comparatively well constructed, and the place altogether appears more respectable than any other town in the Persian Gulf. The Bazar is well supplied with fine cattle, poultry, fish, vegetables, fruit, and also with grain; and a very considerable trade appears to be carried on with this port,* particularly by those tribes who inhabit the whole extent of the Arabian Coast from Ras-ul-khima to Grain. Although plenty of cattle and fine large sheep were for sale, yet the prices demanded for them were higher than at any other port in the Gulf; and rice being an article of importation, was consequently both scarce and dear. Manama Town.

There are numerous springs of excellent water in the interior of Bahrein, but at too great a distance from Manama for a ship to be readily supplied. The only water used on Arad, as well as that for supplying vessels, is brought up in skins by the Divers from the bottom of the sea at the depth of 3 fathoms, where there is a fine spring of good fresh water, with the top of a jar fitted to the mouth of it, through which the water gushes. From this mode of procuring water, it is reasonable to suppose that it can seldom be procured quite fresh, and as a small supply of this

* Lieut. Tanner farther observes, that they possess many vessels of various kinds, so constructed as to answer for war or traffic; he saw 38 vessels of large size, viz. Bugalars, Dows, and Trankeys, exclusive of numerous small craft and Diving Boats employed in the Pearl Fishery. The mast of one of the Bugalars measured 94 feet in length and 8 feet in circumference, and her yard measured in length 141 feet 6 inches. There were also at this time several large boats building, and many absent at sea.

The people of Bahrein are hostile to the Imaum of Muscat, and friendly to the Jowassmee tribes about Ras-ul-khima, and were suspected, similarly with these tribes, to be disposed to acts of piracy when certain of success. Nevertheless, they treated Lieut. Tanner with every mark of attention, and with hospitality.

brackish water is expensive, vessels bound to Bahrein should provide against the necessity of watering there.

Arad Island and Town.

The Island of Arad is nearly separated into two parts by a sandy isthmus, which is almost overflowed by the sea at high spring tides. The Northern part of this Island is usually called SOMMAHEE, and the Southern division MAHARAG, on which the town is situated. This town is not near so extensive or populous as Manama, but is environed by a wall for matchlock defence; and a communication is constantly kept up between the two places by means of ferry boats.

Near the Isthmus that connects these two divisions of Arad, there is a village called PSETINE, and fronting it about one mile to the Westward, upon the MIDDLE GROUND SHOAL, stands a small flat Islet called by the natives GUSSAUR SAWHEE, having on it a kind of low tomb, not very conspicuous.

When at the N. W. anchorage with the bearings already mentioned, in sounding from the vessel in S. S. E. direction towards the town of Manama where the country boats lay, carried $3\frac{1}{4}$ and 3 fathoms water above a mile within the vessel, then shoaled to 2 fathoms sand, on the Western verge of BREAKWATER SHOAL, which stretches in an easterly direction parallel with the rocky bank that extends along the Bahrein shore, and connected with it at the inner harbour, leaving a channel between reefs full $\frac{3}{4}$ of a mile in length E. S. E. and W. N. W., and rather less than $\frac{1}{2}$ a mile in breadth, with soundings of 3 to $2\frac{1}{4}$ fathoms mud, shoaling as you proceed farther in, toward the inner anchorage, where the bottom is again sandy. This is situated in front of the Sheik's House at Manama, where the boats lie conveniently in 1 to $2\frac{1}{4}$ fathoms at the bottom of the bight or channel, about 300 yards from the rocky banks on either side, and about $\frac{1}{3}$ of a mile from the shore, partly sheltered from the N. Westers by the S. W. projection of Breakwater shoal. This anchorage has also a convenient Hard, protected from the surf by a dam on each side, between which they haul up their largest boats for security or repair.

Inner Harbour.

Anchorage.

When in 2 fathoms sandy bottom, Portuguese Fort bore W. b. S.$\frac{1}{2}$ S. Gussar Sawhee N. b. E., $\frac{1}{4}$ E., Water Castle E. b. N.$\frac{1}{2}$ N., and the Sheik's House S. E. b. S. distance $\frac{1}{2}$ a mile.

Ferry, Channel, or Fisher's cut.

The distance across the ferry between the two islands is rather more than a mile, and in it (nearest to the Maharag) there is a narrow channel betwixt the rocks, which undulates between the reefs to the N. W., affording a passage with 3 to $1\frac{1}{2}$ fathoms water, towards the S. E. anchorage. This is occasionally used in fine weather by the country boats drawing 6 and 8 feet water, but the tide is so rapid in this intricate channel formed between the reefs, as to render it hazardous even for a small vessel.

Durable shoal a new discovery.

DURABLE SHOAL, situated in the Gulf of Persia, near the Arabian coast, is a new discovery, upon which the ship Durable of Bombay, Capt. R. Guthrie, was wrecked, on the night of the 21st of August 1817, proceeding from Busheer towards Bahrein, under convoy of the Company's cruiser, Ariel, which vessel narrowly escaped the danger.

The Durable's Journal describes the Shoal to extend E. S. E. and W. N. W. 8 or 9 miles, from 2 to $2\frac{1}{2}$ miles in breadth, very steep-to, consisting of hard pointed rocks, and patches of sand in various parts, with depths from 1 to 2 and 3 fathoms, observed lat. 26° 59′ N. long. 50° 26′ E. by chronometer.

Geo. site.

Lieut. Arthur, commanding the Ariel, describes the Shoal to extend W. N. W. and E. S. E. about ten or twelve miles in a narrow spit, the broadest part of the centre where the Durable was lost, being $2\frac{1}{2}$ or 3 miles, which part he made in lat. 26° 55′ N. and $25\frac{1}{2}$ miles West of Busheer town, by good chronometers.

There is great reason to suppose (this officer observes), that all to the Northward of Bahrein is full of shoals, and a vessel bound to that Island should keep in the meridian of Busheer till in lat. 26° 35′ N. then the lead should be kept going quickly.

BALE OF COTTON ROCK, of doubtful existence, has been searched for in vain by Captain Walker, of the Company's cruizer Teignmouth, under the orders of the Bengal government. He was from the 24th of May to the 9th of June 1817, searching for the Rock between Lon. 86° E. and 90° 30′ E. in the latitudes generally assigned to it, and is perfectly satisfied that no such rock can exist in those parallels of latitude. Bale of Cotton Rock, thought to have no real existence.

ENGANO ISLAND was lately visited by Capt. John Napier, in the ship Good Hope, having been sent from Fort Marlborough, in search of the survivors of the crew of the ship Union, Captain Barker, who were retained in captivity by the inhabitants of that Island, after the ship was wrecked there. Capt. Napier made a sketch of the island, which was engraved at Calcutta in 1817, accompanied by the following remarks and observations, which may prove useful to navigators. Island of Engano.

The North Point of Engano is in lat. 5° 15′ S. lon. 102° 25′ E. and the Northern coast is bold, having no soundings from 3 to 5 miles off, the beach consists mostly of sand, but in some places the shore is rocky. Geo. site of the North Point.

From the North Point the coast extends E. b. S. ¾ S. 15 miles to a point, in lat. 5° 20′ S. lon. 102° 39′ E. and from this another point bears S. S. E. 2½ miles. South 3 miles of the latter lies North Island, covered with trees, and excepting a small opening on the West side, it is surrounded by a coral Reef of considerable extent, partly dry at low water, but having deep water close to it all round. South Island, distant 3 miles S. b. W. from North Island, is also covered with trees, and surrounded by a Reef, excepting the Western side, which has a sandy beach bold to approach. Middle Island is very conspicuous from the sea, having a high sandy beach, with a tuft of trees on the centre. A Reef extends from this island to the S. S. E. and Eastward, but it is bolder to approach on the North and West sides. Sandy Island, bearing N. N. W. a small ½ mile from Middle Island is not more than 6 feet above the surface of the sea, and a Reef projects from it both to the East and Westward; but on the North side it is bold, with 8 fathoms close to the beach. Contiguous Islands.

The Reef of the main Island projects far out toward Sandy Island, rendering the passage narrow, though perfectly safe, the reefs being steep-to on both sides, with 10 and 11 fathoms water in the channel. The passage between Sandy and Middle Islands is still narrower, with 11 fathoms water, and equally safe. The passage between Middle and South Island has 16 and 17 fathoms water, and is also safe, by keeping near to South Island until it bear to the N. Eastward. Passages between them.

Between South Island and the low S. E. point of the main Island there is no passage even for a boat. The passage between North Island and the main should not be attempted, as the reef extends far out from the coast, rendering the passage very narrow.

Outside of MIDDLE and SANDY Islands, there is shelter from the prevailing winds in either monsoon, in 12 to 14 fathoms sand, good anchorage, and plenty of wood may be got from either of the outer Islands; but as water can only be procured in the Inner Bay to the Northward of the village, a ship requiring a supply should anchor there, to protect her boats and people, the natives being very treacherous. You may anchor in 4, 5, or 6 fathoms sand and mud, within little more than a mile of the creek, Anchorage.

keeping nearest the South shore, which has in most places a sandy beach, and bold to approach, the trees growing quite into the water in some parts.

Geo. site of S.E. Point of Engano.

The S. E. Point of Engano in lat. 5° 30¼′ S. lon. 102° 38¼′ E. is low and sandy, covered partly by a range of Palmira trees. The reef projects from this point 2 miles to the S. E. and Eastward, and joins that from South Island, having very high breakers.

South Point.

The South Point, in lat. 5° 30′ 50″ S. lon. 102° 29¼′ E. distant 9 miles West, a little Southerly from the S. E. point, projects out in an acute angle, having about a mile distant to the S. Eastward a Pyramid or Black Rock about 8 feet above water. Between these points the coast forms a concavity, fronted by the coral reef, at from 1 to 1½ mile distant, upon which the sea breaks high in many places. In ranging along this part of the coast at 4 miles distance no danger could be seen from the mast-head, excepting the reef, which is steep-to; and it was here, about three miles to the Eastward of the South Point, the Union was said to have been lost.

and West Point.

The West Point in lat. 5° 21′ S. lon. 102° 19½′ E. by chronometer from Rat Island, allowing the latter to be in lon. 102° 26½′ E. bears from the South point N. W. distance 14 miles, but the coast between them forms a concavity, having a small island near it in lat. 5° 26 S. lon. 102° 26′ E. surrounded by a coral reef to seaward, projecting above ½ a mile, with high breakers. Here we remained four days, and anchored several times in 25 fathoms coral and sand, in coasting along this part, where the greater part of the Union's crew were procured; which is higher, seems better cultivated, with more inhabitants than any other part of the coast. The coral reef, that fortifies this coast, must be very dangerous to approach in strong S. W. winds.

From the West Point, the North Point of the Island bears N. E. a little Easterly distant 8 miles, the coast between them forming two intermediate points, from which the reef projects above a mile, with soundings from 35 to 25 fathoms near it; and soundings of 35 to 15 fathoms are obtained on most parts of the Southern coast at the distance of ¼ to 1¼ or 2 miles from the reef.

Reef at the N. E. end of Bintang.

AN EXTENSIVE REEF projects out from the N. E. extremity of the Island Bintang, which ought not to be approached by ships passing in the night through the South Channel, between that Island and Pedro Branco, at the entrance of the Strait of Sincapour.

La Paix's, or Catwick Shoal.

LA PAIX'S SHOAL, situated between the Great and Little Catwick, hitherto little known, was seen by the ship Charlotte on the 22d October 1817, in her passage from China towards Bombay, and the following extract is given from her Journal.

In proceeding through the Channel between Pulo Ceicer de Mer and Pulo Sapata, when the former bore N. W. ¼ W. and the latter S. b. W., we were horsed by a strong Southerly current toward the Little Catwick, and the wind being light, were obliged to get out the boats to assist in towing clear of it. Soon afterward the Breakers on La Paix's Shoal were discovered, and at first taken for a rippling, but on approaching near, the danger became conspicuous: every exertion again was necessary, in order to clear it, by towing, which was effected at the distance of ¾ or 1 mile, with the help of a light increasing breeze. Pulo Sapata then bore S. 56° E., Great Catwick S. 68° W., Little Catwick just clear of the West end of Sapata, and the high Breakers on the Shoal S. 48° E., distant about 1 mile, apparently extending about ¾ of a mile, from N. N. E. to S. W., and it was probably about a foot under the surface of the sea. The shoal appeared to be situated about half way between Pulo Sapata and

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the Great Catwick, as nearly in mid-channel as possible; but the sea broke too high to admit an examination of it with a boat.

A ROCK or SHOAL is stated to exist on the North coast of Java (farther out than the Woerden Castle Rock), upon which the private ship Princess Charlotte lately grounded, and received considerable injury.* When aground in $2\frac{1}{2}$ fathoms, found in sounding around the ship only 19 and 20 feet water, at the distance of 40 or 50 yards, then it deepened suddenly. Pamanoekan Point bore from the Shoal S. b. W. $\frac{3}{4}$ W., distant about 14 miles. After lightening the vessel, she floated off, and steered S. b. W. 3 miles, then anchored in 19 fathoms, Pamanoekan Point bearing S. S. W., and the Woerden Castle Rock seen plainly from the deck, bearing S. S. W., distant $1\frac{1}{2}$ or 2 miles. Rock near the North coast of Java.

GILLOLO PASSAGE is now much frequented by ships from America, which proceed toward China by the Eastern route, as they prefer it to the passage through Dampier's Strait. Gillolo Passage.

Captain G. Welstead, of the Company's ship General Harris, bound from Bombay to China, on the 13th January 1818, entered the Gillolo Passage by the Western Channel, formed between Pulo Gasses and Lookisong, which appeared about 3 or $3\frac{1}{2}$ leagues wide, and very safe, with no soundings from 50 to 70 fathoms. The Island Lookisong was approached close at the South part, and it was observed to lie very near to the East end of Oby Major, and there seemed to be no passage between them for ships.

After passing through Gasses Strait, in steering Northward for the Gillolo Passage, a long ridge of Rocks was discovered, much in the way of ships steering toward the South point of Gillolo, particularly if they borrow near the Dammer Islands, on account of Westerly winds. This Ridge extends E. N. E. and W. S. W. about 2 miles, the Eastern part being about the height of a small ship's hull above water, from thence extending in a low ridge about 2 miles W. S. W., with a continuation of Breakers some distance farther toward the Dammer Islands; and the highest or outer part of the Ridge lies about 6 miles E. N. E. from the Southernmost of these Islands, and $7\frac{1}{2}$ or 8 leagues N. N. E. from the N. E. extremity of Lookisong. Ridge of dangerous Rocks.

This Ridge of Rocks is situated in lat. 1° $8'\frac{1}{2}$ S. lon. 128° $20'\frac{1}{4}$ E. by good observations and the mean of 3 chronometers, which not being hitherto described nor placed in the charts, Captain Welstead, in a manuscript chart of his Track through the Pitt's and Gillolo Passages, has delineated it by the name of *Horsburgh's Rocks*, but the local name of EASTERN RIDGE of PULO DAMMER would probably be more appropriate to distinguish this danger.† Ships passing here in the night should keep well to the Eastward, giving a wide birth to the Dammer Islands, as there are no Soundings to denote the proximity of the foregoing danger.

A SHOAL very little known to navigators (probably the GROSVENOR'S SHOAL) has been experienced to lie near the Boo Islands, on which the Lord Cas- Shoal near the Boo Islands.

* Which rendered it necessary to put her into dock, at Calcutta; from whence this account was transmitted to me by Captain D. Inverarity, Secretary to the Marine Board.

† In a M.S. chart of the Track of the French ships Resolution and La Subtile, among the Molucca Islands, and between the North coast of Oby Major and the Dammer Islands in 1786, I find the above-mentioned danger was seen by them, and marked on that chart.

Hereagh of Bombay struck, and the following account was transmitted by Captain [illegible]nt of that ship.

January 9th 1817, at 11 P. M. saw the Boo Islands bearing N. E., steered between East and E. N. E., kept the lead going, but got no soundings. At 3 A. M. the ship struck on a Coral Shoal, got out the long boat and cutter, carried out the stream anchor and dropped it in 9 fathoms water about half a cable's length from the ship, and hove her off, then deepened immediately from 8½ to 9, and 16 fathoms, next cast no ground. When upon the shoal, found the current setting directly toward the Boo Islands 4 knots per hour; had no time to take *correct* bearings, but it bears from the East end of the Boo Islands between S. ½ W. and S. ½ E., as the East end of those Islands bore nearly North when we struck. At daylight Pulo Popa bore E. b. S. and the Boo Islands N. W., distant 4 or 5 miles.

Rock near Macassar Road.

A ROCK in the Channel leading to Macassar Road was explored on the 8th of July 1813, and when upon it in 6 feet water, the house on Lyly and Rajah Bony's House were in one with Gon River bearing S. E. and two White Pillars E. N. E. By keeping Lyly open of Rajah Bony's House, on either side, you will pass clear of this danger, which was found to extend North and South about 3 ships' lengths, and about a cable's length N.W. b. W. and S.E. b. E., with 2½ and 3 fathoms water, at ½ a cable's length distance from it.

Longitude of Kabruang.

KABRUANG, one of the Tulour Islands, was seen by Captain Balston, of the Princess Amelia in 1816, who made it in lon. 127° 11′ E. by chronometer, measured from Lombock Peak, allowing the latter to be in lon. 116° 26′ E., as stated in the India Directory, which places Kabruang considerably to the Eastward of the situation assigned to it in that work.

Reef of Formosa, South Point.

FORMOSA SOUTH POINT is thought to have a Reef projecting from it, for Captain Maxwell, in H. M. late ship Alceste, passed between Botel Tobago [illegible] and Formosa, and saw very high Breakers, which he thought were upon a Reef of Sunken Rocks, projecting a considerable distance from the low Southern point of Formosa; the noise of the Breakers was distinctly heard at the distance of 4 miles.

Endeavour Rock in Bass' Strait, a new discovery.

ENDEAVOUR ROCK, has been lately (1817) discovered in Bass's Strait, by Captain Hammant, of the brig Endeavour, who states it to be in lat. 39° 38′ S. lon. 147° 35′ E., and he gives the following description: when the South end of Kent's Group bore W. b. N., Craggy Island S. S. E., the Islet called sometimes Wright's Rock S. W. b. S., discovered a Reef with two small Rocks on it, visible at the rebound of the sea (being then low water), bearing S. ¾ W.; this danger lies in a line between Craggy Island and Wright's Rock, about ⅓ of the distance from the latter, and is directly in the track recommended by some navigators for passing through the Strait.

Isle near Kanguroo Island, S. coast New Holland, a new discovery.

A SMALL ISLAND, off the South Coast of New Holland, was discovered by Captain Hammant of the Endeavour, on the 6th July 1817, at 7 A. M., which he made in lat. 36° 27′ S. lon. 127° 2′ E., and it appeared to be about 30 feet in height and 400 yards in circuit, with Breakers bearing from it S. W. 3 miles, another Breaker N.W. b. N. 6 miles, and a third Breaker bearing from it N.E. b. E. about 1 mile. At 10 A. M. saw Kanguroo Island, distant about 7 leagues.

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